

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

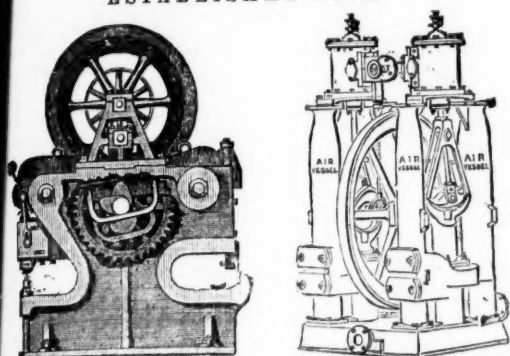
[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2136.—VOL. XLVI

LONDON, SATURDAY, JULY 29, 1876.

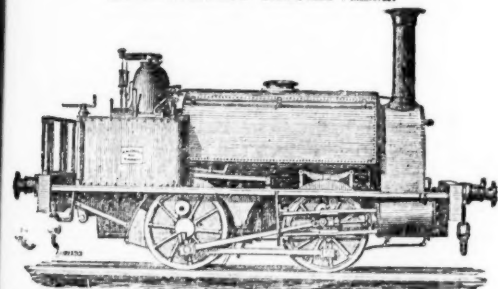
PRICE (WITH THE JOURNAL) SIXPENCE.
PER ANNUM, BY POST, 21 4s.

JOHN CAMERON'S
SPECIALITIES ARE ALL SIZES OF
Steam Pumps, Shipbuilders' Tools,
BAR SHEARS.
ESTABLISHED 1852.



OLDFIELD ROAD IRON WORKS,
SALFORD, MANCHESTER.

HENRY HUGHES AND CO.
FALCON WORKS,
LOUGHBOROUGH.
Honourable Mention—PARIS and VIENNA.



LOCOMOTIVE TANK ENGINES,

for COLLIERIES, MINERAL, and CONTRACTORS' RAILWAYS, of the best materials and workmanship, always in progress, from 6 to 14 in. cylinders, four or six wheels coupled, for cash, hire, or deferred payments.

For Excellence
and Practical Success
of Engines



Represented by
Model exhibited by
this Firm.

HARVEY AND CO.
ENGINEERS AND GENERAL MERCHANTS,
HAYLE, CORNWALL.

LONDON OFFICE,—120, GRESHAM HOUSE, E.C.
MANUFACTURERS OF
PUMPING and other LAND ENGINES and MARINE STEAM ENGINES
of the largest and most approved kinds in use, SUGAR MACHINERY,
MILLWORK, MINING MACHINERY, AND MACHINERY IN GENERAL.
SHIPBUILDERS IN WOOD AND IRON.

MANUFACTURERS OF
THE PATENT PNEUMATIC STAMPS.
SECONDHAND MINING MACHINERY FOR SALE.
IN GOOD CONDITION, AT MODERATE PRICES—viz.,
PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES;
STEAM CAPSTANS; ORE CRUSHERS; ROLLERS and PITWORK of
various sizes and descriptions; and all kinds of MATERIALS required for
MINING PURPOSES.

PATENTEES.



PATENTEES.

SAML. MARSDEN & SON,
MANCHESTER SCREW-BOLT WORKS
London Road, MANCHESTER.
200 TONS OF BOLTS, NUTS, &c., ALWAYS IN STOCK,
MADE BY PATENT MACHINERY.



Will make 10 bolts per minute. Will make 60 nuts per minute.

Patentees and Makers of Special Machinery for Bolt
Spike, and Nut Manufacturing.



Over 60 of these Bolt and Spike-making Machines have been sold to Engineers,
Railway Carriage and Wagon Builders, and Screw Bolt Manufacturers.
These Nut-making Machines will produce 65 to 85 nuts per minute, 1/4 to 3/4 in.
diameter of hole, at a cost for labour of 1/4 d. to 1 d. per gross.
Machines to make up to 1 1/2 in. nuts are in progress of making.
To see the Machines working, apply as above.



PARIS,
BRONZE MEDAL, 1867.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH,
SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the
Geographical Congress, Paris, 1875—M. Favre, Contractor, having
exhibited the McKean Drill alone as the MODEL BORING MACHINE
for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland
Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecutive weeks, ending February 7, was 24'90, 27'60, 24'80, 26'10, 28'30, 27'10, 28'40, 28'70 metres. Total advance of south heading during January was 121'30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere (7 1/2 lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these Machines for the SEVERN TUNNEL; the LONDON AND NORTH-WESTERN RAILWAY for the FESTINIOG TUNNEL; and the BRITISH GOVERNMENT for several Public Works. A considerable number of Mining Companies are now using them. Shafts and Galleries are driven at from three to six times the speed of hand labour, according to the size and number of machines employed, and with important saving in cost. The ratio of advantage over hand labour is greatest where the rock is hardest.

These Machines possess many advantages, which give them a value unapproached by any other system of Boring Machine.

THE MCKEAN ROCK DRILL IS ATTAINING GENERAL USE THROUGHOUT THE WORLD FOR MINING, TUNNELLING, QUARRYING, AND SUB-MARINE BORING.

The MCKEAN ROCK DRILLS are the most powerful—the most portable—the most durable—the most compact—of the best mechanical device. They contain the fewest parts—have no weak parts—act without SHOCK upon any of the operating parts—work with a lower pressure than any other Rock Drill—may be worked at a higher pressure than any other—may be run with safety to FIFTEEN HUNDRED STROKES PER MINUTE—do not require a mechanic to work them—are the smallest, shortest, and lightest of all machines—will give the longest feed without change of tool—work with long or short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or open work. Their working parts are best protected against grit and accidents. The various methods of mounting them are the most efficient.

N.B.—Correspondents should state particulars as to character of work in hand in writing us for information, on receipt of which a special definite answer, with reference to our full illustrated catalogue, will be sent.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL, IRON, AND FLEXIBLE TUBING.

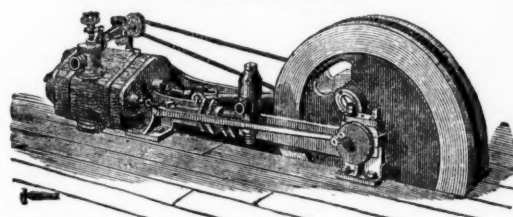
The McKean Drill may be seen in operation daily in London.

MCKEAN AND CO.,
ENGINEERS.

OFFICES,
42, BOROUGH ROAD, LONDON, S.E.; and
5, RUE SCRIBE, PARIS.

MANUFACTURED FOR MCKEAN AND CO. BY
MESSRS. F. AND W. MACLELLAN, "CLUTHA IRONWORKS,"
GLASGOW.

Economical Steam Power
Guaranteed.



THE

GENERAL ENGINE & BOILER CO.,
8, UNION COURT, OLD BROAD STREET,
LONDON.

Patent "Express" Engines, especially suited for power from 2 to 20-h.p.

Patent Horizontal Expansive Engines, with automatic variable expansion gear. Will work as economically as most condensing engines.

Patent Horizontal Condensing Engines, the economical working of which is guaranteed.

Compound Condensing Engines, for Mills, Pumping, Blowing, &c.

Patent Feed Heaters, guaranteed to heat the feed water up to over 200° Fahr., and save about 15 per cent. of fuel.

Patent High-pressure Boilers, safe, simple, economical, and accessible.

Cornish, Multitubular, and other Boilers.

CATALOGUES & ESTIMATES ON APPLICATION.

THE

PATENT SELF-ACTING MINERAL
DRESSING MACHINE COMPANY

(LIMITED).

T. CURRIE GREGORY, C.E., F.G.S.

OFFICES,—150, ST. VINCENT STREET, GLASGOW.

IMPORTANT NOTICE TO MINE PROPRIETORS.

MR. GEORGE GREEN, ENGINEER, ABERYSTWITH,
SUPPLIES MACHINES under the above Company's Patents for DRESSING all METALLIC ORES. Dressing-floors having these Machines possess the following advantages:—

- 1.—THEY ARE CHEAPER THAN ANY OTHER KIND IN FIRST OUTLAY.
- 2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED BY DRESSING-FLOORS IS REQUIRED.
- 3.—FROM 60 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.
- 4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN FOR MARKET AT ONE OPERATION.

They have been supplied to some of the principal mines in the United Kingdom and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines, Darlington, Colberry, Nanthead, and Bollyhope; the Stonecroft and Greyside Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Escair-mwyn, and Ystumtuen Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines, Darlington; also Mr. Sewell, for Argenteiferous Copper Mines, Peru; the Bratsberg Copper Mines, Norway, and Mines in Italy, Germany, United States of America, and Australia, from all of whom certificates of the complete efficiency of the system can be had.

WASTE HEAPS, consisting of refuse chads and skimpings of a former washing, containing a mixture of lead, blende, and sulphur, DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly profit on our Nanthead waste heaps amounted last year to £800, besides the machinery being occupied for some months in dressing ore-stuff from the mines. Of course, if it had been wholly engaged in dressing wastes our returns would have been greater; but it is giving us every satisfaction, and bringing the waste heaps into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines, Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much pleasure in stating that a full and superior set of your Ore Dressing Machinery has been at work at these mines for fully a month, and each day as the moving parts become smoother, and those in charge understand the working of the machinery better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply, and satisfactorily than by any other method."

Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines, says—"Your machinery saves fully one-half on old wages, and vastly more on the wages we have now to pay. Over and above the saving in cost is the saving in ore, which is not much short of 10 per cent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The separation which they make is complete."

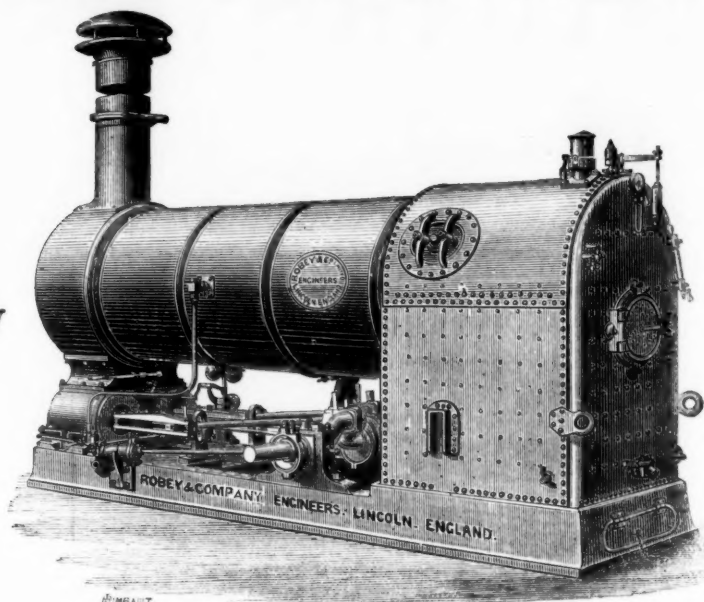
Mr. MONTAGUE BEALE says—"It will separate ore, however close the mechanical mixture, in such a way as no other machines can do."

Mr. C. DODSWORTH says—"It is the very best for the purpose and will do for any kind of metallic ores—the very thing so long needed for dressing floors."

Drawings, specifications, and estimates will be forwarded on application to—
GEORGE GREEN, M.E., ABERYSTWITH, SOUTH WALES

ROBEY AND COMPANY'S NEW DESIGN OF HORIZONTAL FIXED ENGINE AND LOCOMOTIVE BOILER COMBINED.

The Cost of all expensive
Brick Buildings and Chimney
is saved by this Engine.



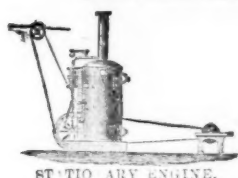
The Boiler is specially
arranged to burn saw-dust
and refuse wood,
and every description of
inferior fuel, and thus
economise Coal.

For full particulars and prices, apply to—

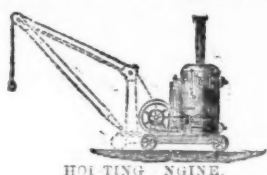
ROBEY AND COMPANY, ENGINEERS, LINCOLN, ENGLAND.

LONDON OFFICES.—98, CANNON STREET.

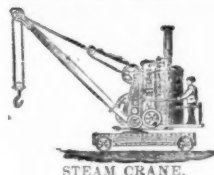
CHAPLIN'S PATENT PORTABLE STEAM ENGINES & BOILERS.



ST. TIO ANY ENGINE.
No building required.



HOISTING ENGINE.
With or without Jib.



STEAM CRANE.
For Wharf or Rail.



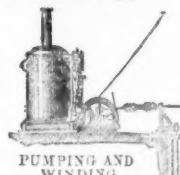
CONTRACTORS'
LOCOMOTIVE.



TRACTION AND
ROADWAY ENGINE.



SHIP'S ENGINE
AND DISTILLER.



PUMPING AND
WINDING
ENGINE.

The ORIGINAL combined Vertical Engines and Boilers, introduced by Mr. CHAPLIN in 1855, specially designed and adapted for
Pumping, Winding, Hoisting, Sawing, Driving Machinery, and for General Contractors' Work, Railway
Sidings, Coal Mines, Quarries, Gas Works, &c.

WIMSHURST, HOLICK, & CO., ENGINEERS, 34, WALBROOK, LONDON, E.C.
WORKS:—REGENT'S CANAL DOCK, 602, COMMERCIAL ROAD EAST, LONDON, E. (Near Stepney Station).

Parties are cautioned against using or purchasing Imitations or Infringements of these Patent Manufactures.

THE "CHAMPION" ROCK BORER, For Tunnels, Mines, Quarries, AND OTHER WORKS.



Intending purchasers can satisfy themselves that
the advantages claimed for the "CHAMPION" over
all other Rock Borers are not over-estimated.

For the amount of work it will do, it is the light-
est, most compact, most durable, and cheapest in
the market.

**IMPROVED AIR COMPRESSORS,
And other MINING MACHINERY.**

**ULLATHORNE & CO.,
METROPOLITAN BUILDINGS,**

63, QUEEN VICTORIA STREET, LONDON, E.C.

L'AUOUILLE (Weekly Journal) represents the IRON and
COAL TRADES of FRANCE. Advertisements referring thereto, and sub-
scriptions, 20s. per annum, post paid, received by the London Agents, EDWARD
GASPER and Co., 49, Finsbury Circus, E.C.

MANCHESTER WIRE WORK.

NEAR VICTORIA STATION, MANCHESTER.

(ESTABLISHED 1790).

JOHN STANIAR AND CO.,

Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for
LEAD AND COPPER MINES.

Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper.

EXTRA STRONG PERFORATED ZINC AND COPPER RIDDLES AND SIEVES.

Shipping Orders Executed with the Greatest Dispatch.

J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),
Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES and
FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,
RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Cran Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.
STOURBRIDGE FIRE BRICKS AND CLAY.

WARSOP AND HILL,

HYDRAULIC AND GENERAL ENGINEERS.

SPECIALITIES.

PATENT PORTABLE POWER ROCK DRILLS.

IMPROVED

AIR COMPRESSORS AND STEAM ENGINES.

MINERS' PICKS, with interchangeable Steel Points.

Semi-portable and fixed Winding, Hauling, and Pumping Engines

HYDRAULIC WINDING ENGINES.

MINING MACHINERY; PLANTS COMPLETE.

Full particulars, with prices and photographs, on application.

DEERING STREET, NOTTINGHAM.

CONCENTRATION.

THE

"FRUE VANNING MACHINE,"

THE MOST PERFECT WASHING APPLIANCE
FOR FINE MATERIAL, will OPERATE on the FINEST SLIMES

Self discharging. Will separate Lead, Zinc, Tin, Copper, and
Silver Ores cleanly at one operation. Capacity, 8 tons per day.
Descriptive circular, with drawing, post free on application.

For terms, references, and particulars, apply to—

WALTER McDERMOTT, AGENT.

16, EAST TEMPLE CHAMBERS,

FLEET STREET, LONDON, E.C.

Office hours, Twelve to Three.

COAL.

South Wheal Fortune is a little mine near the eastern boundary of this parish, adjoining Sithney parish, and near Rosladden mill.

It was worked under the late Capt. M. Martyn's management about two or three years, having a steam-engine pumping, but the returns were very small—lead, I believe. North Wheel Vor is situated in Penhale and Pengwedd estates, a long sett, but always poor; idle many years, but I think that the engine (rotary) is still *in situ*.

Wheal Cruett was worked slightly by the late Mr. Wallis, of Trevanoe, in 1823, afterwards under the name of Wheal Wallis, in 1849, &c., by a company formed by the late Mr. F. Bottrall, of Camborne. It was, like the rest, abandoned with a loss of a few thousands. When Mr. Wallis worked the mine a singular circumstance occurred. He had ordered timber to be brought to the mine for the construction of a whim. One night some thieves cut the "span-beam" into two parts and carried them away! The thieves were never identified, and no reward was offered for their discovery. The saw-dust showed that it was cut.

A mine was opened at Pengelly, about the year 1820, to try a lode said to contain blende. A steam-engine was erected, but little more done. I think the mine was called Wheal Buller, after the name of the lord of the land, now Lord Churston.

A little old mine, called East Great Work (previously called Rowas Mine), was worked about 20 years ago for a year or two. A steam-engine was erected, but loss, the ordinary result, so discouraged the company as to lead to abandonment. On the same estate the late Mr. Wallis, at his sole expense, worked a little mine called the Bog Mine. The power employed for drainage was a high water-wheel. It has been idle, I believe, ever since—60 years. A poor thing. Trevena Mine, near Breage village, was worked by Capt. J. Vivian and Co. Idle many years.

The other mines in Breage I reserve for another paper. I believe all the mines are stanniferous except Trewas and Godolphin, which were cupiferous.—*Truro, July 25.* R. SYMONS.

NEW ORE DRESSING INVENTIONS.

SIR.—So many strong representations having been made on the above subject by self-opinionated novices and others, whilst some practical agents have been represented as men of but little, if any, knowledge of their profession, my object in writing has been to ascertain if these boasted discoveries would really bear the test of fair examination. "T. R. T." states that the inventions of certain gentlemen, whose names have been before the public for years past as the regenerators of mining, are not in use at the New Consols. Now, as these were the very inventions which were to revolutionise the present system of mining, and which were to demonstrate the inaptitude of practical men, may I be allowed to ask "T. R. T." how it happens that these inventions have not been adopted in the mine referred to, it being generally understood that one of the principal Magicians was for some considerable time especially engaged there? The statement of "T. R. T." that Dolcoath with the mode of dressing in operation at New Consols would make ten times its usual profit is quite in keeping with most other rhapsodies that are constantly emanating from the immediate neighbourhood of the New Consols. *July 25.* OBSERVER.

ANOMALIES OF MARKET PRICES AND SECURITIES.

SIR.—After the crisis that culminated in the crash of May, 1866, a lengthened period of distrust resulted in the accumulation of unemployed capital to an extent that rendered industry and enterprise unremunerative, and, consequently, neglected. Then came a period of cheap bread all over Europe, which continued up to the Franco-German war in 1870. Still, during the interval of the panic in 1866 and the close of 1869, the introduction of the submarine telegraph, the opening of the Suez Canal, and the completion of railway communication between the two great oceans, were silently readjusting the conditions upon which overseas commerce must thenceforth be carried on. The primary cause of the panic of 1866, and the subsequent collapse, was over "trading" and over "contracting," coupled with gigantic "pawning" of railway, shipping, building, manufacturing, and almost every other description of constructive enterprises; in fact, it became a question whether "contractors or financiers" were to go to the wall, and but for the firm attitude of the Bank, and the strength of the old school of private bankers and financiers, hence as the conflict proved, and disastrous as the consequences were in the case of Overend Gurney, Barnet and Co., and Royal Bank of Liverpool, the very fabric of joint-stock banking throughout the whole provinces of England and Scotland would have crumbled to atoms. The period of 1870, when money was abundant, corn cheap, and war certain, enterprise and industry flourished, and especially as regards mining; the high prices of iron stimulated and re-animated the getters of ore in Scotland, Cleveland, Staffordshire, and elsewhere. A demand for iron necessarily involves a demand for other metals and also minerals, especially coals, and thence arose from the panic of 1866 to the war in 1870 the sequence of movement by which mining attained that prominence which rendered it unequalled in gains by any other branch of home industry.

The prices of iron were equalled by those of tin, and from all apparent causes the future would prove prosperous and expansive. Dolcoath, Cook's Kitchen, Tincroft, South Crofty, Phoenix, Trumpet, Great Work, Margaret, Providence, St. Ives Consols, Botallack, Owles, and many other Cornish mines were as volatile as air, and apparently as permanent and expansive as the most sanguine adventurers or the most greedy capitalist could desire. Yet all these bright anticipations proved to be only visionary delusions. Strikes and combinations between labour and capital struck to the very root of prosperity in the coal and iron trades, and as effect ever follows on cause the decline and collapse in those industries have proved as signal and important as were the advance and gains acquired through their upward movement, while the privations which miners have now to submit to are doubly acute and severe, in consequence of the idleness and voluptuousness that were indulged in during their days of prosperity. Again, Cornwall has collapsed as far as tin mining is concerned, through one cause, and that alone—the discovery in Australia of and exportation of such quantities of the metal that the value of the ore 14 or 20 or 70 per cent. is reduced from 100l. to 45l. per ton. The mines are as productive as ever in Cornwall, yet their depth, cost of drainage, fuel, and labour render them of little commercial importance to the investing public. Copper and lead mining, however, offer great chances of success, and should be much more advocated and encouraged than unhappily is the case. West Tolgus and North Pool, adjoining, are worthy of attention; the first gives regular dividends, and the latter formerly divided 64,000l. on 4500l. capital. A cross-cut is being extended on the cross-course at the 25 fm. level, from which we have seen some pretty ore; this indicates the contiguity of the lode, and early probable success. South Crofty and Agar, seven years ago, spiritedly worked would be large dividend mines, while South Caradon continues to pay quarterly dividends in the face of all difficulties, and in defiance of every obstruction. So much for sound management and unity of purpose in the executive. We now pass from 1870 to 1876, and submit for the consideration of your readers the following observations.

At this moment, July, 1876, the weather is glorious, and the prospects of an abundant harvest most propitious and hopeful! Just as before, the return of confidence after three years of stagnation in trade and commerce, up to the close of 1869, Nature steps in, and with a bountiful effulgence of sunshine ripening the spread of corn and the crops of food and fodder necessary for man and for animals—life-giving hope and confidence to the tiller of the land, and energy with renewed life to the man of industry and practical enterprise—who, may we ask, can for a moment reflect on Nature's smiles and gifts and be unmindful that man is expected to gain his sustenance from the sweat of his brow and the work of his hands? And if Nature smiles on her products in store, why should not man smile also, while he discerns in the distance the reward of his labour and application in the arena of industry essential—nay, indispensable—to success in commerce, trade, manufacture, or mining interests of the nation?

That confidence has been sorely tried all must admit. The total extinction of 300,000,000l. capital in about one year in foreign loans alone, is equal to fourfold the imperial taxation of the country for one year, and the cessation of 30,000,000l. interest by defaulting

states and communities, is equal to 3l. a head for every adult male annually in Great Britain. Colonial securities are the safest of all fully paid-up bonds, with interest of 5, 6, and 7 per cent., now open for selection, where a given rate of income is desired rather than a fluctuating though probably an expensive one. Hence Australia, New Zealand, Cape, Natal, Columbia, Canada, Colon, and the Mauritius, are open for selection; and pray can anyone for a moment contend that these colonies, under the fostering care of England, are not preferable to Englishmen than the stocks of Russia, Austria, Italy, Argentine, Chilean, say naught of Egyptian, Turkish, Greek, Guatemala, Honduras, Costa Rica, Peruvian, Spanish, or Venezuela.

The English funds, Consols having touched 96½ per cent., bank stock, Metropolitan Board of Works, City bonds, and East India securities are the best we can possibly select, but the interest is low, and capitalists, with trustees, are the chief proprietors. In industrial pursuits, shipping is inactive and, to say the least, unremunerative. Building is extending in every direction around London and in the chief provincial centres, and even if in cases they prove unremunerative to builders, the money is spent at home—it does not leave the country, while labour and enterprise give the nation so many additional houses as accumulative wealth. Waterworks, gas, and insurance companies are as inactive as docks. Canals and railways command the first position of all constructive undertakings, and as they now constitute the highways of England, Ireland, and Scotland they must prove for years expansive, for locomotion of every description is indissolubly allied therewith. In other commercial pursuits joint-stock banks and discount companies take the lead as market securities, yet we fail to discover the security, for if joint-stock banks do not possess the seeds of dissolution we never yet could read a day of the future. A "stern chase is a long one," but the goal is won by the fleetest vessel and the ablest pilot. We should like to see the class of pilots, or rather "experts," who can secure the six metropolitan joint-stock banks from the shoals, banks, and quicksands identified with the administration of 150,000,000l. of cash in an ever varying commercial, trading, manufacturing, and mining atmosphere.

That we shall have a bountiful and prosperous harvest every authority believes—that the new moon was ushered in with a few puffs of wind, accompanied by lightning and rain, is not at all surprising nor disheartening; but, on the contrary, they have proved refreshing and invigorating to the crops, as well as healthful to the community. The difference between a good and bad harvest is immense in savings to the nation, if 60,000,000l. annually be a fair average; ten to fifteen, less or more, is just equal in the extreme to about the absorption of the large amount of bullion now accumulated in the vaults of the Bank; and next to agriculture in importance is that of mining, which not only benefits the miner, but the manufacturer, machinist, steam shipping, railway locomotion, and every other department of commerce and industry throughout the length and breadth of the land. All our domestic associations are associated with coals, and our culinary utensils, articles, and paraphernalia with iron, tin, copper, and zinc—hence without mining industry one-half of the community would be without employment, and the whole destitute of social comforts.

Great attention is directed to New Consols, and deservedly so. Capt. R. Pryor states as a fact that the machinery and apparatus now at his disposal will give 1000l. gains monthly, and without further outlay, should he be allowed to proceed unfettered by directors and professors. Surely he asks nothing but what is fair and in justice to himself and son, who have devoted their time and intellects to the study of chemistry, and almost solely for the advantage of this company, and they now demand an opportunity to establish their reports and reputations. We heartily wish them success, for that would be the salvation of the county. There are many mines in that district which the highest authorities regard favourably if the ore be treated chemically; and pray, may we ask, why should the old school of miners deter the progress of science, the arts, and of chemistry, and thus intercept the progress of younger, though more versatile and practical, scholars? Firmness we admire, but obstinacy is destitute of sense, hence cannot but be reprobated.

The true investor in order to win must call forth painstaking labour to his aid, or he unquestionably becomes a jobber who deals upon the surface current of events, or otherwise a gambler who reads nothing, blunders on, and does something without object, yet in ninety-nine cases out of a hundred with certain loss. Investment can prove of no practical use unless through study it becomes searching, and when thus applied it will necessarily become earnest and grasping in its scope. As exemplifying our views, why cannot the investor ask himself, and ascertain the facts for himself, why so many who have embarked in mining pursuits still encounter defeat and disaster? There is no mystery involved, or exercise of intelligence required than is necessary in the discharge of the ordinary affairs of life. He could easily discern, with ordinary study and observation, that the shallow bunches of copper in the South-West of England were detected and wrought by our forefathers in the first half of the current century; that mining in depth is attended with extra costs of drainage and discharge; while the expenses of manipulation and dressing of ores when at surface are equally expensive as in days gone by; and that the discovery of rich ores in our colonies and abroad advanced the supply, so that demand was met at greatly reduced prices, hence the decadence of copper mining in the South-West of England. The investor could also discover that the production of tin in Australia has paralysed the production in England, and that none but our richest mines can sustain existence. Thence it follows that mining for that metal is fraught with risks that in former days were unknown. Still the investor could pursue his investigations further, and he would find that Cornwall possesses immense resources, if chemistry be called into her assistance, and the old system of procedure for once and ever exploded; while observation would also denote that in various localities lead and blende can be raised in bulk that would tenfold reward capitalists for money embarked and risks incurred in the development of the various veins. We could enumerate scores of mines that lay idle for lack of enterprise and capital to work them, but as examples we will give two for the nonce—Pencorse to the east of East Rose, and Wheal St. Andrew in Gwiltian—the old burrows at the latter are a fortune within themselves.

Wales has hitherto engrossed all but the entire attention of the London market as regards lead mining. The Grogwinion is a recent prize; Van is of longer standing, yet, like Devon Consols, it grasps within its own scope most if not the whole minerals of the district, though possibly hereafter Van Consols and Glyn may result in something good.

It must be remembered, however, that Wales, rich as she is in prizes and promises, is not alone in the arena of successful lead mining. York-hire can boast of its wealth, and the gigantic fortunes acquired through industry and application, and it is gratifying to learn that intelligent brokers and jobbers are now directing their energies and capital in that direction, as evidenced in Pateley Bridge, West Pateley Bridge, and Craven Moor. Cumberland, Westmoreland, and Derbyshire also possess their mines of wealth, while Shropshire stands second to no county in England for gains to public companies.

We have, however, to proceed still further north to discover the mines that have enriched private enterprise, and which, for the first time, are just merging into public recognition and adoption on our Exchanges in London as public companies. The vast wealth acquired by individuals is something astounding, while it is gratifying to observe the unanimity of purpose which exists between vendors and purchasers as to sharing between themselves and the public the profits resulting and likely to prove permanent hereafter from working the mines henceforth as public companies instead of private properties. As examples of these we may enumerate—Durham stands at the head of production in respect to its lead mines, rich as she likewise is in iron and coals. The mines to which our attention has been chiefly directed are the London Lead Company, Cornish Hush, Bolihope, and the group which is known as Beaumont's Mines; yet it is with more than ordinary interest that we notice the introduction on the London markets of the Dryburnside Silver-Lead Company (Limited), in 100 shares of 50l. each, and which are in request at 20l. to 25l. premium. The prospectus is ex-

pllicit, yet terse, the shares wholly subscribed for, and the proprietary practical and opulent. The most satisfactory and graphic description of the property we have yet seen is sent direct from our own agent, who is now in the district. These shares will, probably, range high, as returns of lead can at once be brought to market. 79, Cornhill, London, July 27.

R. TREDINICK,
Consulting Mining Engineer.

BEDFORD UNITED MINES.

SIR.—The statement of accounts sent out to the shareholders of this mine by Mr. Laws, the secretary, on the 8th inst., for the meeting on the 19th, showed a cash balance in hand of 150l. 16s. 7d.; but the liabilities and assets a balance was shown against the mine of 642l. 7s. 11d. I understand from the minutes of the meeting that accounts were passed, yet from some unaccountable means and indescribable source a statement of liabilities and assets, with the addition of the item of 550l., showing a balance against the mine of 1192l. 7s. 11d. was produced at the meeting. Surely such important statements ought not to be sent out to shareholders without some little explanation just to satisfy an outsider; for if the latter be correct, we may doubt if ever we have had a correct statement of accounts before. Will Mr. Laws be kind enough to explain this matter for the benefit of outside shareholders? *Harrowbarrow, July 25.* T. H.

[For remainder of Original Correspondence, see to-day's Journal.]

INVESTMENT IN PROGRESSIVE TIN MINES.

The trade in metals has been languid for a considerable time, not only in this market but abroad, and in every foreign centre of dealings. It has been, however, better sustained here than anywhere on the Continent; and, in fact, notwithstanding lower markets, the complaints made by the merchants in metals have been unreasonably. It has been the fashion with John Bull, long before the present generation dived or dealt in mines, or anything else, to complain of the state of trade. If we were to take the opinion of those interested in buying at low prices, and of the "bears" on our Stock Exchange, things are always very bad—at all events, complaints of bad trade are chronic. Trader, follow the advice of the Norfolk farmer—"Cry out before you are hurt, and then you are ready for all events." We have no wish to hold out false hopes, or offer encouragement to random undertakings or "blind adventures," the practice of the "bears" is just as objectionable as the "bears," although in an opposite direction. The manoeuvres of both have been detrimental to mining and to the course of investment in this greatest, surest, most profitable, and most national of our industries; but we maintain that the trade in metals, although at lower prices, as might be expected from the general decline in the rates of all markets in all departments of commerce, has been better than that of any other sphere of industry in the United Kingdom. This is true of the superior metals, however the reaction from extraordinarily high prices and abnormal production may have depressed iron mining and manufacture.

In describing this as the most national of our industries, common consent will support the opinion that the raw supply and the manufacture are both our own. We must send for our cotton to Egypt, India, the United States, &c., that the looms of Lancashire and all "Cottonend" may be supplied. We are not like the spiders, we do not secrete the thread we weave. Our woollen manufacturers feed their mills with the fleeces of Australia, South America, Germany, in fact the world. The makers of the beautiful linens, diapers, damasks, &c., in the Sister Country, compose their productions of flax brought from many countries, from Belgium to New Zealand. Even the furniture which graces our drawing-rooms is shaped from the wood of Honduras, Ceylon, and various distant realms. But the innumerable articles which we use, which are constructed of metals, are mainly formed in what M. Guizot rather happily termed "underground England," meaning, of course, to apply the word as a generic name for our "Empire of Islands."

But the reader of this remark may exclaim, "Why, we import copper, lead, zinc, and even iron!" That is true, but we export a great deal of what we import just as we get it, and nearly all the rest of it in articles fashioned by English hands. The fact, however, is that our imports of metals is, although a present necessity, a permanent reproach. British mining has not of late received anything at all approaching to adequate encouragement from British capitalists. We need not have recourse to foreign parts for tin, copper, lead, or iron, any more than for coals, china-clay, slate, granite, and other minerals.

There are vast stores of the superior metals laid up in these islands which are unworked because of the apathy of capitalists. Nor is it requisite to get at them by guess, by the divining rod, or by harem scare adventures. Mining has taken its place among the sciences, and like every science it is closely allied to something, and probably more than one other. Geology is the handmaid of mineralogy. The country, as the miners call it, where deposits lie presents in all cases phenomena that are cognisable, determinable, and definite. If the miner works in the dark in one sense he does not do so in another, the light of philosophy guides him where the sun's rays never fall, the light of science precedes the miners' lamp. The English capitalist, especially the small capitalist, and the speculator must be discriminated; the former has often been a loser by the questionable enterprises of the latter, and is deterred from investing in safe undertakings by the results to himself and others of Stock Exchange gambling, "bulling," and "bearing," whereas if he would only think he would learn to recognise that the intrinsic value of a mine is no more affected by a fictitious rise or fall on the Stock Exchange than the security of the building itself by the unstable and faithless proceedings carried on beneath its dome.

We fancy we hear some thrifty clergyman, some maiden lady, some "warm" but careful farmer, some retired tradesman, some spirited and active citizen say—Where shall we find a real solid mining enterprise at home where we may invest with reasonable hope of security and fair returns? Such persons need not go far to seek. There are magnificent progressive mines in this country—tin, copper, lead, &c.—to which investors will be directed if they consult professional men who are competent to advise them, and whose reputation has been established as that of honest agents or dealers.

It is impossible in a single article to run through the catalogue of such mines. It would be as easy to give a list as it would be for a mouse to run over the prospectuses; but more about that another time. For the present *ex uno disce omnes*, and we call it St. Agnes Consols. It is a tin mine, and it is scarcely necessary to add it is in Cornwall. The investor will not have to travel to Australia or the great Eastern Archipelago, or carry on a long correspondence with persons he does not know in those or any other regions. He can learn all about it by calling at the office of the company, Ethelburga House, Bishopsgate-street Within, and he can test the accuracy of the information he receives by an easy and pleasant journey through the beautiful western counties of England to the property of the New St. Agnes Mine Company, parish of St. Agnes, Cornwall, where enquirers will be met with a prompt readiness to satisfy them, and the enquirer receive every courtesy.

As to the company, the names of the directors will be seen from the prospectus to be men of probity and position, and competent judges of mining undertakings. As to the enterprise itself, its history may be very shortly and satisfactorily told; and as to the property, its excellence will be pronounced beyond all question by every intelligent investigator.

St. Agnes Consols was originally introduced by Mr. John Banall Reynolds, of Ethelburga House, Bishopsgate-street, who, and whose father before him, has been thoroughly conversant with Cornish mining, and especially with scientific search for tin. The narrative of the original undertaking is "the old, old story" with too many Cornish mines which afterwards yielded abounding wealth. The price of tin fell, as fall it sometimes must, in common not only with that of other metals, but with that of all other commodities, in all markets, and everywhere. Investors at a distance from the mining

JULY 29
districts became
necessary for co
eritable result
to the property
among the origi
care, and work
company; the a
has been chosen
working the mi
"Is the mine
of old sharehol
answered in the
investigates the
estimated in one
the world. It
splendid return
connected, whic
have been sunk
mate success in
owners. An un
in addition to
posits of coppe
that part of the
metallic deposi
ports of tin a
Cornish tin fro
to be worked u
creasing they
1876 nearly 25
of 1875, which
shows an advan
country un
New St. Agnes

COPPER OR
Mine.
South Cro
Devon Gro
West Tolg
Markie Vi
Greaver ar
West Seto
Glasgow W
Carn Bre
South Cro
Hingston
East Car
Gunnisall
East P.
Phoenix
Wheal B
Botallack
Gawton
West Ma
Levant
Brookwo
West Pol
West Ba
Wheal G
Beilford
East Bas
Wheal El
Wheal R
North B
St. Aub
Carn C
South C
South h
Ambros
Champi
Belston
North L
Unity V
West Ro
Wheal C
North L
St. Agn
Wheal
Cathie
Wheal
East G
South L
New R
Penstr
South
South
Fein
North
South
James

COM
Vivian
P. G
Neville
Wheal
Wheal
South
Penstr
South
South
Fein
North
South
James

COPPE
Bret
Kno
Tigro
Bally
Maur
Tan
Rum
Glyn
Cape
Moo
Aust
Yell
Conc
Moo
N.
V.
W.
M.
C.
R.
W.

VEN
BEL
of rail
the pr

districts became alarmed, and shrank from advancing the capital necessary for conducting the mine to a successful issue, and the inevitable result was a stoppage of the works. Mr. Reynolds held on to the property with indomitable resolution, and many gentlemen among the original shareholders united with him to purchase, secure, and work the property. These persons constitute the present company; the shares are 5000 of 5s. each, and the body of directors has been chosen, with Mr. Reynolds as their chairman, who are now working the mine with skill and spirit.

"Is the mine likely to be a success?" will be the natural enquiry of old shareholders and intending investors. This question can be answered in the affirmative, and will not be doubted by anyone who investigates the matter with a view to business. The property is situated in one of the richest stanniferous districts in Cornwall or in the world. It is the centre of a circle of mines, which have yielded splendid returns; the rich Wheal Kitty lode is likely soon to be intersected, which will make the mine dividend-paying. Shafts have been sunk and adits opened, and with every prospect of proximate success in the opinion of eminent mining captains and engineers. An unusually splendid vein of tin has been reached; and in addition to the tin, as is common in Cornish tin mines, good deposits of copper have appeared, with sulphur-mundic, which in parts of the country is regarded as a sure indication of valuable metallic deposits. An impression has gone abroad that the imports of tin are greatly increasing, and must speedily drive the Cornish tin from the market. This is a fallacy, foreign tin requires to be worked up with Cornish tin, and so far from the imports increasing they are diminishing. They have fallen the first half of 1876 nearly 25 per cent. from the amount imported in the first half of 1875, while our export of foreign tin during the same period shows an advance of 50 per cent. British tin is wanted; stanniferous country unworked is to be found extensively in Cornwall, and New St. Agnes Mine invites bona fide investors.

SALES OF COPPER ORES.

COPPER ORES SOLD AT THE CORNWALL TICKETING, FOR THE QUARTER ENDING JUNE 30, 1876.

Mine.	Tons.	Amount.
South Caradon	1508	9,494 2 6
Devon Great Consols	2062	5,109 18 0
West Tregus	951	5,501 18 0
Marke Valley	1040	4,134 14 0
Craver and Abraham	1174	4,112 0 6
West Seton	749	3,915 7 6
Glasgow Caradon	500	2,98 1 0
Carn Brea	508	1,999 6 6
South Crofty	501	1,826 6 6
Hingston Down	330	1,672 12 6
East Caradon	309	1,577 3 6
Gannislake (Clitters)	516	1,554 11 0
East Tregus	240	1,262 15 0
Wheal Bassett	213	1,287 3 6
Blacklaek	141	1,226 0 0
Gawton	352	965 14 0
West Maria and Fortescue	371	916 12 0
Wheal Russell	111	893 3 6
Levant	170	818 11 0
Brookwood	114	813 9 0
West Pollice	192	774 9 0
West Basset	170	745 17 0
Wheal Crebor	195	680 15 0
Belford United	96	460 4 0
East Basset	136	370 0 0
Wheal Emma	80	362 5 0
Wheal Friendship	95	292 5 0
Unit Wood	50	245 6 0
St. Aubay United	73	240 3 6
Carn Cumborne	34	235 9 0
South Carn Brea	35	199 10 0
Ambrose Lake	50	198 17 6
Champion's Ore	44	179 0 0
Belstone	28	157 6 0
North Levant	30	155 15 0
Unit Wood	34	150 3 0
West Rosker	36	134 2 0
Prince of Wales	21	101 17 0
North Trekerby	13	97 16 0
St. Agnes Consols	40	165 2 0
Wheal Agar	32	88 0 0
Cathedral	10	43 15 0
Wheal Grenville	20	61 9 0
East Grenville	9	57 16 6
South Polmar	14	55 13 0
New Rosewarne	11	51 14 0
Penstruthal	33	41 12 0
South Condurow	9	27 17 0
South Tolcarne	3	20 9 6
Pen-an-drea	2	18 0 0
North Treglegh Wood	6	17 11 0
South Francis	2	13 0 0
James's Ore	2	13 0 0

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Virian and Sons	2801	£13,410 10 1
F. Grenfell and Sons	1231	7,179 1 5
Neill, Bruce, and Co.	1913	7,558 4 8
Williams, Foster, and Co.	2194	9,560 3 10
Mason and Elkington	2472	10,311 18 5
Copper Mines' Co.	1444	6,619 7 6
Charles Lambert	1082	4,875 9 7
Sweetland and Co.	1669	6,158 5 6
Total	14,726	£55,637 1 0

COPPER ORES SOLD AT THE SWANSEA TICKETING, FOR THE QUARTER ENDING JUNE 30, 1876.

QUARTER ENDING JUNE 30, 1876.				
Mines.	BRITISH.		Tons.	Amount.
Berehaven	1039	£ 6,118 16 6
Knockmation	680	3,799 0 6
Tignory	32	954 14 0
Ballyvennisk	83	443 17 6
Cronbane	362	427 0 6
Tany-Bweli	25	398 18 0
Bumpyfield	20	178 10 0
Cumcurrey	5	170 5 0
Hyne's Ore	8	66 8 0
Total	2235	£12,552 10 0

COLONIAL.									
Cape	...	...	...	...	...	3662	...	£92,818	4 0
Monta	...	...	...	...	...	726	...	13,268	14 6
Austr	...	...	...	...	...	228	...	2,064	7 0
Yalta	...	...	...	...	...	198	...	1,347	13 0
Concordia	...	...	...	...	...	14	...	206	9 0
Total	...	...	...	...	...	5128	...	£109,525	7 6

FOREIGN.									
Mexican ...	...	...	...	...	...	205	...	£ 2,475	5 6
Algerian ...	...	...	...	...	...	201	...	2,337	14 0
Cuba Precipitate	...	...	...	...	...	75	...	2,332	10 6
Caracazo ...	...	...	...	...	...	169	...	1,91	2 6
Del Rato ...	...	...	...	...	...	72	...	1,184	8 0
Total ...	...	...	...	...	...	662	...	£ 9,221	0 6

RECAPITULATION.									
British	...	...	...	...	...	...	...	...	...
Colonial	...	...	...	...	...	...	...	...	...
Foreign	...	...	...	...	...	...	...	...	...
Sundries	...	...	...	...	...	...	...	...	...
Total	...	...	...	...	...	...	...	...	...

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Copper Mines' Co.	101	£ 1,106 0 0
F. Grenfell and Sons	510	9,283 11 6
Neill, Bruce, and Co.	668	13,598 5 6
Virian and Sons	1692	20,474 11 0
Williams, Foster, and Co.	2846	41,532 10 3
British and Foreign Copper Company	338	8,081 10 0
Mason and Elkington	1161	19,849 6 3
Charles Lambert	146	3,566 4 0
Sweetland and Co.	540	9,719 0 9
W. Roberts, Jun.	132	3,064 14 3
Total	8227	£132,536 10 0

by the locomotive engine before they have time to cool down and mix with the cold air currents circulating in the lower part of the tunnel.

Meetings of Public Companies.

GROGWINION LEAD MINING COMPANY.

The half-yearly ordinary general meeting of shareholders was held on Friday, July 21, at the City Terminus Hotel, Cannon-street, Mr. Ross in the chair.

Mr. G. BEDFORD (the secretary) read the notice calling the meeting. The report of the directors (which has already appeared in the Journal) was taken as read.

The CHAIRMAN said that he had been so accustomed at these half-yearly meetings to enter into a long discussion of what had been done in the past, and indulge in some prognostications as to the future, that on the present occasion he had, comparatively speaking, but little to tell the shareholders. It was useless to go over ground they had gone over before, inasmuch as those various points which he had at different occasions submitted for their consideration had nearly all been realised, and he should be occupying their time to no purpose if he went over the same ground again, and, therefore, he would confine his observations to the report and accounts. He might venture to say (what he had said on previous occasions) that the accounts were perfectly satisfactory; he had said the same each half-year, and he trusted he should be enabled to say the same for many half-years yet to come. (Hear, hear.) The great feature in the report now before the meeting was the statement that the returns were now 100 tons per month, but sufficient time had not yet elapsed to enable the company to realise the full pecuniary benefit of those sales—that was to say that the increased returns had not increased the dividend, as they would increase it on future occasions. The shareholders would see by the report that out of the profit for the half-year the directors recommended that the same dividend should be paid as last half-year—2s. 6d. per share. One word of explanation might be necessary on the paragraph relating to the dividend, because statements were made at the last meeting that the dividend to-day would certainly be as good, if not better, than the dividend then declared. No doubt a great many of the shareholders, if not all, would remember that about Christmas last, and a large portion of the early part of the year, there was a period of very severe weather, which he thought was far worse in the mountainous district of Wales than in any part of England, and the severe weather interfered very materially with the working of the mine, and caused a loss in time of very nearly three weeks. If they would also carry their memories back to the accounts which were presented last half-year, they would remember that there were seven monthly sales of ore, amounting to 490 tons, whereas for the six months just ended there had been six sales of ore, amounting to 480 tons; but although they had sold 10 tons of ore less and had expended more money than in the previous half-year, yet they had been enabled to maintain the profit, and in fact add a trifle to it, and he did not know whether they would agree with the directors in considering that such a position was sound and satisfactory. (Hear, hear.) One paragraph in the report alluded to the matter of the rent of the dressing-floors, but that was a subject with regard to which he need scarcely enter into any detailed explanation. The whole amount involved was not more than 80l. per year, and he thought the shareholders would be content to leave future arrangements in connection with the matter in the hands of the board, who were fully alive to the necessity of doing all that was required, and who would no doubt one day obtain all that was wanted in the interests of the company. With regard to the progress made at the mine, he thought he had better leave Mr. Kitto to explain that. The report of Mr. Kitto, dated July 11, was so satisfactory that it required no comment. Turning to the balance-sheet, the first item was the capital account—they would see there had been spent in developing the mine, in buildings and machinery, a larger amount this half-year than last, altogether about 800l. He need scarcely say that nearly all that had gone in improving the property. The revenue account started with the charge of the six monthly pay sheets, which was slightly in excess of the amount charged in the corresponding half of last year; this was due to the fact that the working and development had been in excess of the corresponding period, owing to certain necessary works for buildings, for foundations, for new machinery, new baffle, &c. The charge for engineers' and managers' salaries remained as before; the carriage of ores was slightly in excess, and if they made a calculation they would find that the 190l. 3s. 8d. charged under that head amounted to 8s. 7d. per ton of ore; at the same time it was scarcely fair to analyse it in that way, as some small portion of that was for the conveyance of materials up to the mine. The item of "rent of water-course, 40l." had been explained to the shareholders before, as also had the item "rent of road to Michaelmas, 1876, 12l. 10s." It had been explained that the company had no road of its own up to the mine, but were the tenants of an excellent road constructed at a heavy expense by a neighbouring company; an arrangement had been entered into by which the Grogwinion Company had the use of the road, the other company keeping it in repair. The royalty on the ores showed that an increase had taken place over the last half-year; an increase not large but very satisfactory, because the larger the amount of royalty paid by the company the larger dividends there would be to pay to the shareholders. (Hear, hear.) There was an item, "poor rates and road rates on royalty, paid to December, 82l. 5s. 10d.," which was pointedly alluded to in the auditors' report; in the report which Mr. Horsley, the shareholders' auditor, had been good enough to make, he stated that the poor and road rates seemed to require the attention of the board of directors. But this was really a matter with regard to which the directors could promise very little, they were the parochial charges for the year ending Dec. 31, 1875, and therefore properly belonged to last year, but were not rendered till this year. They were based upon the amount of royalty paid to the superior landlord; they appeared large, and no doubt were so, but he was unable to say that the directors would be able to do anything to reduce those charges, but they would try all they could to do so. The auditor had also drawn attention to the depreciation of 12½ per cent. written off for wear and tear, and remarked that the directors "will determine whether this rate should be maintained after this date, or whether it can be properly reduced below the above average." He could only say the directors preferred to let it remain at 12½ per cent., and if they could increase it to 15 per cent. they would be much better pleased. (Hear, hear.) The miscellaneous expenses were the smallest that had yet been presented to the shareholders. On the other side of the accounts the sales of ore required no comment. The attention of the shareholders had been directed to the fact that the average price had been 15l. 1s. per ton, as against 14l. 16s. for the half-year ending December, 1875. All the sales from July would be 100 tons per month; he did not know whether there would be seven sales this half-year, as they had lost three weeks, and he was not quite sure that that could be fetched up, but every effort would be made to do it. In the profit and loss account there was an item of 16l. 17s. 6d. for transfer fees, representing 2s. 6d. for each transfer on 133 transfers, as against 53 transfers in the previous half-year; this showed that there had been more business in the shares, in fact, there could not be a more convincing proof that there had been a considerably increased business in the shares. The directors had charged the company with all pay up to the very end of June, and had taken no consideration for any ore which might be in bin to come against that item. In conclusion, the Chairman moved the adoption of the report and accounts, and said he should be very happy to hear any criticism which any gentleman might have to make upon the report.

A SHAREHOLDER said that perhaps it would save time, and he was sure it would be very acceptable to the shareholders if Mr. Kitto, the manager, would make a few remarks on the present condition of the mine and workings. (Hear, hear.)

Mr. JOHN KITTO said he had very great pleasure in meeting the shareholders on the present occasion, but after the very exhaustive report which he had written, and which had been sent round to the shareholders, he really had very little more to say. The CHAIRMAN: Perhaps you will say why the dividend is 2s. 6d. instead of 3s. (Hear, hear, and a laugh.)

Mr. KITTO said he thought that might be explained by the fact that although

they had gone a considerable way during the last six months in opening up the reserves of the mine, yet they had not been able to increase the sales enough to enable them to pay the additional expenses, and increase the dividend at the same time. (Hear, hear.) There was just one thing in his report which might require some little explanation, or rather comment, and that was with respect to the quantity of ground which had been opened up during the half-year. The question had that day been asked him why the ore had cost more per ton in the last half-year than in the first. The explanation was that although they had not raised and sold many tons more, yet they had opened up and made available twice as much as they had at the beginning of the last half-year. Let them take the number of fathoms driven in each level; there were 11 fms. between each level, and every fathom driven meant 10 tons of ore, and if they multiplied that it would make nearly 1913 fms. of ore ground; take from that 423, the number of fathoms stopped away, there were 555 fms. left opened up during the year, and left behind as reserves. That had been discovered during the year, and had been added to the previous reserves. With respect to No. 4 lode, it had always been considered that No. 4 lode was an offshoot of No. 3, but during the last two or three months it was found that No. 4 was not an offshoot of No. 3 lode, but was a distinct and separate lode. (Hear, hear.) When they took into consideration that the lode was standing untouched from the 21 down to the deep adit, it was scarcely possible to over estimate the value of the lode, or the reserves which there were in the ground. (Cheers.) There was no doubt whatever that there were immense reserves in the ground. At whatever point they intersected it, the cross cuts would not be more than 10 or 12 fms. in length, and it would be somewhere about three months' work upon any point from the western boundary of the intermediate cross cut up to the middle of the set, and they could intersect the lode in a cross cut of about 4 fms. in length. Every point of intersection would give 50 ft. above their heads. The cross-cut would cost about 6l. or 7l. per fathom.

The CHAIRMAN: Would you recommend the directors to give you the power to drive all the cross cuts simultaneously?—Mr. KITTO said they should not be proceeded with at the same time, but if they would leave it in his hands they should be driven much more rapidly than the ore ground could possibly be taken away, so that in the succeeding half-year, and for many half-years to come, they would not find the reserves less than to-day—in fact, in his opinion every half year would see the reserves very considerably increased. (Cheers.) There was no doubt that the company possessed one of the best mines in Cardiganshire, and he believed it would continue the same for a very long time to come, and that not one of the gentlemen present would live to see it exhausted. He went on to refer to the hundreds of tons of profitable stuff now on the dressing floors, which must be cleared away, so that two or three months would still elapse before the company would derive the full advantage of the new machinery.

In answer to a question by Mr. Horsley, Mr. KITTO said he could not pledge himself to do 700 tons in the next six months, but he should have no difficulty in doing 1300 tons in 12 months.

Mr. HORSLEY said that Mr. Kitto had always proved himself an honest and straightforward man, and, therefore, he placed great confidence in what he said. (Hear, hear.)

The CHAIRMAN: Can you pledge us that at the expiration of the ensuing six months you will be selling 150 tons per month?—Mr. KITTO said he could not pledge himself to that, but he hoped to be able to sell 150 tons per month by this time next year. Judging from present prospects, he had no hesitation in saying that. He added that the average value of the lode during the past six months had been about 14 cwt. to 1 fm., including the productive as well as the unproductive ground, and they might anticipate that that value would continue.

Replying to a question about the quality of the machinery, Mr. KITTO said he had visited several mines in Cardiganshire, and he had certainly not seen any machinery so effective as that possessed by the company.

Mr. ROWMAN, speaking as a practical man, said he believed this company possessed the best machinery in Wales.

Mr. HORSLEY asked whether an increase in the price of the ore might be expected?—Mr. KITTO said of course that would depend upon the price in the market. He might mention that there was not 6d. per ton difference in the intrinsic value of this company's ores between January and December last.

Once said he was almost surprised that Mr. Kitto had obtained the good price he had for his ore. Mr. KITTO said this company stood almost at the head of the list as far as regarded the true price obtained. There was a small quantity of silver in the ore, but nothing that a smelter would buy, and it was the purity of the lead which enabled the smelter to give such a good price.

Mr. HORSLEY thought that the report of the directors, and also the report of Mr. Kitto, were satisfactory, and he should be happy to second the resolution for the adoption of the report and accounts. He pointed out that the amount of profit would really permit of the declaration of a dividend of 2s. 8d. instead of 2s. 6d. per share, and without suggesting in any way that it should be done, he said that, looking at the excellent prospects before the company it was a fair subject for consideration whether 2s. 8d. per share might not now be declared instead of 2s. 6d.

The CHAIRMAN said that it might be remembered that at the last meeting he suggested the desirability of carrying something forward towards forming a guarantee fund, and looking at all the circumstances, he thought it was better to only divide 2s. 6d. per share at present. (Hear, hear.) They might fairly look forward to double the amount of the present dividend being paid at the next meeting, and judging from what he had himself seen from frequent examinations of the mine, he thought the time was not far distant when the original shareholders might look forward to getting 30 or 40 per cent. return on their money. As regarded the price of the ore, although the next sale might not be at an increased price, still there were one or two little indications that a rise may shortly be expected in the price of lead.

The report was then adopted.

The CHAIRMAN said he wished to draw attention to the last paragraph but one in Mr. Kitto's report, which was as follows:—"We have cleared up and repaired the deep adit level in No. 1 lode sufficiently far to enable us to get up into an old level from 18 to 20 fms. above, and known as the 'long drift,' and from the comparatively small trials that we have already made, it would appear that this old level has been driven on a false vein, and not on the main lode. We have already discovered and broken some excellent samples of ore, and the prospects of soon having a rich lode are most favourable, but I shall be able to say more about this in the course of another month." Now, the lode which was referred to in that paragraph was an old historic lode in the country, and was spoken of in the highest terms by Lewis Morris, an Inspector of Mines, more than 100 years ago. A short time since he himself saw in the British Museum a document in which the writer stated that 160 bins of ore had been got out of the mine in a short time. Therefore, he would like to ask Mr. Kitto how far this company would be able to work that lode, or whether it would be more advisable for some of the shareholders to subscribe 4000l. or 5000l. to work it independently, of course giving this company a share of the profits.

Mr. KITTO said he had been in hopes that the lode would not have been referred to on the present occasion, as it was somewhat premature to speak with certainty on the subject for the time being. As far as he had gone, the lode looked very likely and kindly, and he believed the old workers had gone off on some false vein, but he had not yet been able to ascertain with certainty whether such was the fact. As regarded the working of the lode, if he recommended anything he should recommend that the remaining 2000 unissued shares should be issued and allotted at the present price of the day.

The CHAIRMAN said there was no doubt there was ground enough for another mine on the lode referred to. He made the suggestion relative to raising more money under the profits now coming to the shareholders might in no way be interfered with. Of course, if the directors carried out the suggestion, and issued the 2000 shares, the premiums received thereon would not be employed as capital, but would be invested in Consols as a reserve fund. (Hear, hear.)

Votes of thanks were then passed to the Chairman, directors, and Capt. Kitto, and the meeting broke up.

COOK'S KITCHEN MINING COMPANY.

A three-monthly meeting of adventurers was held on Thursday at the mine, Mr. WALTER PIKE, the purser, presiding. That gentleman read the statement of accounts, from which it appeared that the labour costs for the three months amounted to 2187l. 13s. 1d.; the merchants' bills were 915l. 3s. 6d., and the water rents 100l., making a total expenditure of 3202l. 16s. 7d. The credits were for black tin (50 tons), less 1-60th dues, 2274l. 2s. 4d.; and extra carriage, 12l. 8s., leaving a loss on the 12 weeks working of 927l. 6s. At the last meeting there was a balance against the adventurers of 2202l., but a 10s. call then made reduced this by 1473l., and the balance now against the mine was 1029l.

The purser's report having been read, Capt. THOMAS mentioned that during the last quarter they had increased their returns of tin by about 10 tons, while the costs were about the same as before, so that their loss was 500l. less than in the previous quarter. But it was impossible that they could pay costs with tin at the present price, and it was useless to attempt it, although perhaps they might do a little better than now if they were to stop some of their outwork. They were driving ends and proving points which it was necessary should be done, and if these were suspended the result of working would be different, but he was not prepared to recommend such a course, because under such circumstances they would be doing nothing at all.

Capt. THOMAS, in answer to Capt. JAMES, said they were almost certain to have an improvement in the 320, and to come upon a good lode there. But if the mine was to be worked fairly, ground laid open properly, and the ends driven that they were now driving, he scarcely saw how they were to pay costs unless the price of tin improved.

On the motion of Mr. BAILEY, seconded by Capt. JAMES, it was unanimously resolved to make a call of 7s. 6d. per share. This will meet the loss on the last three months' working.

Mr. BAILEY suggested whether some of the ends could not be suspended with advantage, but Capt. THOMAS did not see his way clear to do so. The only point which they could stop with any propriety was the 190 east—that would save them about 2½ per month.

The Purser then drew the attention of the adventurers to the dispute existing between Cook's Kitchen and Tincroft relative to the water charges alleged to be due from the latter mine. He explained that, in accordance with a resolution passed in 1870, the Tincroft shareholders were to be permitted to drive a cross level into the Cook's Kitchen set, upon condition of their paying for the increased water thrown upon the Cook's Kitchen engine. Some difference of opinion having arisen between the agents of the two mines, it was decided at the last Cook's Kitchen meeting to leave the matter in the hands of the purser and manager, with the view of coming to an amicable arrangement with Capt. Teague. Since then Mr. Pike and Capt. Teague have waited upon that gentleman, with the result that he has declined to pay the money said to be due from him, at the same time stating that the Cook's Kitchen shareholders had their remedy in an agreement which was entered into many years ago, between the two mines. That agreement was made so far back as the year 1813, when Cook's Kitchen had to pay a heavy sum to Tincroft for an encroachment; and a general arbitration clause was inserted in it, to the effect that if any differences whatever should arise hereafter between the adventurers of the two mines, touching the encroachment, or any other matters whatever in connection with the said mines, the same should be referred to such person as the Vice Warden of the Stannaries for the time being might appoint, on the application of either of the parties, and his decision should be binding on both parties. It, therefore, appeared to him (the Purser) that the proper course for them to pursue was to make an application for the appointment of an arbitrator to settle the question between the two mines.

Captain JAMES said he did not agree with the purser as to the bearing of the

VENTILATING RAILWAY TUNNELS.—The invention of Mr. V. G. BELL, of Westminster Chambers, relates mainly to the ventilation of railway tunnels of considerable length, its object being to remove the products of combustion and steam or watery vapour generated

profits of this mine good profits from Pestarena, and if we can eventually get profits from the intermediate mine of Cani (upon which we are silent, because we are doing nothing but a little exploratory work), the Pestarena Company will, after all fulfil all our expectations. With regard to the treatment of the ore, one of the two or three projects for the treatment of the ore, one of which presented strong probabilities of being successful, and if so there was scarcely a doubt that large quantities of ore could be obtained there, which would be profitably worked if the ores could be successfully reduced. The proposal to which he referred came from an eminent firm of French chemists, who had tried the system of the treatment of the ores on a small scale, and he hoped before long to be able to speak more openly to the shareholders upon that subject.

Mr. HENRIE TAYLOR, in reply to questions, said the present system of drainage at the mine was found to be sufficient. In the inclined plane it was proposed to put in a fresh set of pumps, worked by the same engine which worked the old pumps. He had not made much change in the machinery, which certainly was a primitive description, but up to the present it had been found sufficient to get rid of all the water which had been made. As regarded the Peshiera Mine, there was no doubt there was great richness there. In answer to a question by Capt. Lyons, Mr. R. HENRIE TAYLOR said that at the Peshiera the ore discovered by the works opening new ground is quite equal to the ore being taken away, and there is ground discovered to keep the works going for a long time. Mr. R. TAYLOR, in the Pestarena group there were 12,000 tons of ore of the estimated average of 12 dwts. per ton; that is in the last year of the manager's report of 1874, and this has since been increased; and in the group of the manager's report of 1875, there has been much improved by recent discoveries. Mr. R. TAYLOR then gave some further interesting details with regard to the Peshiera Mine at the various points of the mine.

Mr. C. HANBY said he knew something of the history of this company, having been in the service, and the present reports which had been circulated had really done more justice to the property. There were very few properties which would be compared with the Pestarena, but till recently the property had never had a fair chance of being properly conducted. When he first knew the property it was working at a loss of 15 and 16 sh. per ton. He was glad to see that the new inclined plane shaft had been constructed, because he believed it commenced a new and prosperous era for the company. He particularly pressed upon the directors the great necessity of concentrating the sulphurets, which is considered the most profitable operations connected with gold mines. He looked forward to a much better report at the end of the present financial year. Mr. R. TAYLOR said that particular care had been paid to the tailings; and he had been found for catching all the fine slime containing pyrites. The report was then adopted. The retiring directors (Mr. H. J. S. Smith and Mr. W. W. Fisher) were re-elected, and Mr. Swaffield was re-appointed auditor. A vote of thanks to the Chairman and directors closed the proceedings.

CARDIFF AND SWANSEA SMOKELESS STEAM COAL COMPANY.

The third ordinary annual general meeting of shareholders was held yesterday, at the Cannon-street Hotel, Mr. J. D. SHAKESPEARE, F.G.S., in the chair. The notice calling the meeting was read by Mr. JOHN DAVIES, the secretary.

The report of the directors, which was taken as read, was—
PRESTON AND CHURCH.—The capabilities of this colliery have been satisfactorily tested during the year, showing that an output of 630 tons a day can be depended upon from the 6 ft. 9 in. and 6 ft. seams, which being the average work actually done, prove that up one shaft alone at least 70 tons per hour have been raised during the whole working time. A sinking engine that was not required at Resolven, in consequence of work there being discontinued, has been placed in the pit, and is hauling coal from the 6 ft. seam in a most satisfactory way. It is advisable that the further development of this colliery should be carried out by sinking to the 6 ft. seam, the cost of which will not exceed £12,000, and the output from the same would increase the present quantity by 400 or 500 tons a day in two years time. The output from this colliery has exceeded 145,000 tons a day in two years time. The brickworks require about 12,000 to complete them, and this is recommended to be done.

RESOLVEN.—The sinking at Tyra of the two pits to the lower measures, which was part of the covenant in the lease, was discontinued prior to our ordinary general meeting last year, and Major Vaughan Lee, our landlord, has kindly consented to grant us a "waiver" in that respect, on condition of our sinking a pair of shafts about 80 yards to the No. 2 seam in the southern portion of the property. Two new shafts have been opened out at Cwm, on the No. 1 seam, capable of giving about 100 tons a day. A small pumping-engine, that was standing idle at the Tyra Pits before mentioned, has been fixed at the entrance of one of the Tyra levels, and is now hauling coal there from the deep. A level has been driven on the No. 2 seam, near the Tyra Pits, the face of which is now in troubled ground, but as the present capabilities of output are largely in excess of the demand the work there has been temporarily suspended. We regret to say that, in consequence of the unsatisfactory state of the coal trade generally, and in the Swansea district in particular, it has been found impracticable to keep these Resolven Collieries in regular work, in consequence of which the output has not exceeded 60,000 tons, whereas the capabilities are equal to nearly twice that quantity. The brickworks are in full work.

GENERALLY.—In the opinion of the board it seems desirable that all shareholders should fully understand the nature of the company's business in the sense that the principal markets for our coal are the steamship carrying trade and the export coal trade for steam purposes. Both of which have been for a long period much depressed, the causes of the depression being the stagnation of trade generally, and the supplies of coal throughout the country continue much in excess of demand. The output from the whole property has exceeded 200,000 tons, and had the sales of the Resolven coal been equal to capabilities, it might have exceeded 300,000 tons. Referring to the extraordinary general meetings of last year, and to that part of the report of the "Investigation Committee" relating to the financial position of the company, there appears an error in the calculation of uncalculated capital, stated to be £40,000, available for future development, the fact being that the sum of £40,000 was a sum of about £29,000, required to meet liabilities incurred prior to July 31, 1875, which liabilities, other means having failed, rendered the call in January last unavoidable. The recommendation of the committee to close the capital account has been carried out, and no new works have been commenced.

With respect to the modification in the terms of purchase as recommended for adoption, the carrying out of which was placed in the hands of the company's solicitors, by resolution of the extraordinary general meeting on July 29, 1875, the fact has been received from them on the 19th instant the following communication:—"The deed for giving effect to the modification was approved of on behalf of the vendors, but it being suggested that it was competent to any one dissatisfied shareholder to invalidate the arrangement by injunction, and that thus the company would encounter the inevitable hazard of litigation, the advice of Mr. Southgate and Mr. Westlake, both Queen's Counsel of high authority on such subjects, was sought, and although they were of opinion that the holders of the vendors' shares and of the shares to be taken by the vendors would be bound, they advised that, as the modification involved the power of a company to alienate permanently a part of its profits, and that the High Court of Justice would uphold the arrangement against a dissatisfied shareholder of the shares issued to the public." In conclusion, the directors feel bound to state that, considering the depressed condition of the coal and iron trades, and the unprecedently low prices ruling for some months past, the financial position of this company is by no means unsatisfactory, and more particularly when compared with the balance-sheets shown by other concerns of a similar nature. In consequence of the lamented death of Mr. R. Shaw, Mr. Henry White, J.P., of Mining-lane, was elected to fill the vacancy. Messrs. E. P. de L'Hôte and Thos. W. Shaw, having resigned their seats at the board, Messrs. Walter Boden, of Derby, and Robert Walker, of Maidenhead, were elected to fill the vacancies. The directors retiring from office are Messrs. Walter Boden and Robert Walker, who are eligible for re-election, and offer themselves accordingly. Messrs. Cooper Brothers and Co., the auditors, offer themselves for re-election.

The CHAIRMAN moved the adoption of the report and accounts, and said it was customary to make some few verbal explanations for the information of those shareholders who were unacquainted with the difficulties and exigencies of the coal trade. The flood tide of the coal trade had begun to ebb before this company was formed three years ago, and had continued so to ebb ever since, and he could only hope that they had at last reached the dead low water of low price. Everyone present had heard of the reduction in colliers' wages from time to time, but the effect was not perhaps well understood, and, therefore, the supposed benefits arising therefrom were very much overrated. Speaking in general terms, wages formed about one-half of colliery expenses, and hence it was that there was only a deduction on 10s. of every sovereign expended. They must bear in mind that in the first two years of the existence of the company they received 17½ per cent., which was not a very bad dividend; if all investments paid as well as that there would not be so much heard of bad investments. In the report the directors had endeavoured to explain the impracticability of obtaining dividends during the past year, from the extraordinary depression of trade, and the limited time—not more than 10 months—that the company had worked. The first of those ten months was included in the strike, the second month was one of imperfect work only in consequence of having to recover from the effects of the strike, and the third month was one of the most difficult of the company, the directors were by no means dissatisfied with its financial position, more especially in comparison with their neighbours. He could point out a score of coal companies within a radius of ten miles of the company which had at some more or less of grief, and the view of the directors on the position of the company were supported by a letter which had been received from one of the vendors, Mr. Yeo. That letter was also important, as it showed the willingness of Mr. Yeo to settle the matter which was now unsettled between him and company. At the Centre Colliery there had been a profit of 10,000, but at Resolven there had been a loss of 30,000, which was accounted for by the fact that the demand for coal had been so limited that the colliery had only worked three days a week for the greater part of the year, and in the last three months of the financial year it had worked more than two days, and everyone connected with the working of collieries must know the great additional cost of working collieries irregularly. In conclusion, the CHAIRMAN moved the adoption of the report and accounts. Mr. P. P. MOSLEY seconded the resolution.

The SECRETARY, in reply to Mr. Bell and Mr. Batheol, explained two or three items in the accounts.

Mr. RUSSELL EVANS, referring to the paragraph in the report relative to the proposed arrangement with the vendors, said he thought the vendors had made a considerable concession to the company. He was told at the time that there was no legal difficulty in carrying out the arrangement, except that some of the shareholders might object; but, for his own part, he would have run the risk of any shareholder objecting. He thought it extraordinary that 12 months had elapsed without any arrangement having been come to with the vendors, and practically speaking the company was in a worse position to day than 12 months ago. If the arrangement was not carried out, not only would the vendors take any profit which was made, but they would also have a good slice out of the capital of this concern. He moved that the meeting be adjourned, and that a small committee be appointed in order to consult with the directors and the representatives of the vendors, with the view of seeing whether this arrangement could not be carried out.

The SECRETARY, in answer to Mr. Evans, said the difficulty in the way of the proposed arrangement being carried out was that any shareholder could object and take action in the Court to prevent it being carried out. Mr. INCE (solicitor to the vendors) said it was a great pity the modifications in the arrangements could not be carried out, as it would save an immense amount of trouble. Whilst differing from Mr. Evans with regard to the appointment of a committee, he certainly thought the directors and the representatives of the vendors should meet at an early date as possible, with the view of seeing whether the arrangement with the vendors could not be modified and carried out, and the meeting might be held in order to enable that to be done. He moved that the meeting be adjourned for three weeks to enable the directors and vendors to consider with the solicitor to the company how the proposed arrangement, or any modification thereof, with the vendors could be carried out, and to enable the necessary documents to be executed by the directors, subject to the approval of the shareholders.

Mr. P. P. MOSLEY seconded the resolution on the part of the board. He said it had been the earnest desire of the board to bring the matter to an amicable settlement with the vendors without any ill-feeling or anything unpleasant. (Hear.) A short discussion ensued, in which Mr. DIXON and Mr. MACULOGH, and one or two other gentlemen took part; and Mr. EVANS said he would withdraw his amendment in favour of the amendment of Mr. Ince.

A discussion ensued as to the length of time which would be required for the necessary conferences to take place, and it was generally thought that about three weeks would be sufficient to enable the necessary modifications to be made in the arrangements. The amendment of Mr. Ince was then put and carried; and the meeting adjourned for three weeks, at the same time and place.

WEST BASSET MINING COMPANY.

A three-monthly meeting of adventurers was held at the mine on July 20. Capt. JAMES EVANS (the pursuer) read the accounts, which showed that the balance against the mine at the last meeting was 592l. 18s. 2d. The labour costs for March, April, and May have amounted to 5935l. 0s. 10d., and the merchants' bills and coal account to 1345l. 6s. 6d.; making the total expenditure 7280l. 3s. 6d. The credits have been for copper ores 585l. 4s. 9d., and for 155 tons of slag, tin 5586l.; showing a loss on the three months' working of 196l. 2s. 7d., and a balance against the mine of 732l. 18s. 9d.

In answer to a question from Capt. James, the CHAIRMAN said that last month they sold about 55 tons of tin, and stamped 42 or 43 tons. During the first six months of this year they raised 251 tons, of which they sold 231 tons. They had slightly reduced the stock in the house. The price per ton which they had been receiving lately was 44l. 2s. 6d.

Capt. JAMES asked what amount of dues was being paid?—The CHAIRMAN replied that Mr. Bassett received 130th and Mr. Fortescue 124th.

Capt. JAMES: Why is it that there is this difference between the two?—The PURSER: Our deed with Mr. Bassett provides that we pay 130th until we can pay our costs or are receiving dividends. As yet we have no deed from Mr. Fortescue, but we have a letter from him setting forth the conditions on which it will be granted. Capt. JAMES: Could we not induce Mr. Pease, Mr. Fortescue's agent, to grant us the same terms as Mr. Bassett?—The PURSER: I saw Mr. Pease just before the last account, and he then said if it did not improve the question of a reduction in the dues he would be taken to Mr. Fortescue. We saw him again on Monday, and then he informed us that he did not think we ought to complain much, and that we should go on as we were at present. He promised that he would lay the matter before Mr. Fortescue, but we did not gather from what he said that we could hope for any reduction.

Capt. JAMES: I consider that we have great reason to complain, and my own opinion is that we ought not to be subject to dues at all except upon profits, but paying 100l. an acre for all land that is destroyed. I do not think the time is far distant when that system will have to be carried out in the county of Cornwall. In this particular case the dues ought certainly to be reduced to the same amount as Mr. Bassett's.—The PURSER: Unless things improve it is clear that some alteration will have to be made. We cannot go on like this. We told Mr. Pease on Monday that this had become a very costly mine, but although he promised to represent these facts to Mr. Fortescue, I do not think we can expect very much from that. He mentioned the cases of other mines, and amongst them Wheal Grenville, where, he said, they were paying 124th, and did not make any complaint.—Capt. JAMES: Perhaps not, but they will have to complain before long. They are paying heavy calls to support the mine, and the question is how long they can continue to do so.—Mr. J. HOCKING, jun., the lords will find out their mistake when it is too late.—Capt. JAMES: The fact is that when the collapse does come it will come with violence.

Mr. HOCKING: I must say it is very hard that we should have to pay for land, dues, water, and everything else from beginning to end.—Capt. JAMES: We are paying nearly 100l. a year for the stream of water; East Pool pays for it, and Cook's Kitchen pays for it, and I suppose it does not return to the lord much less than 800l. a year in addition to the dues. If the mines were rich and we were making dividends we should be glad to pay these dues, but as we are not, and as we are in that position I do think the subject is one worthy of serious consideration, especially seeing that we have to pay for this water course.

The PURSER: We have also to pay a large sum for the ground we have taken for the new stamps. That will cost us 100l. per acre for the grass land, and 50l. for the croft ground.—The accounts were then passed, and the balance carried forward to the debit of the next account.

Mr. A. RICHARDS asked what freight they were paying for their coals?—The CHAIRMAN said they had a bargain back in May for 1000 tons at 5s. 9d. freight, but at present he thought it would be about 5s. 6d. The carriage was 3s. 7½d., including quay dues, and the price of the coals 8s. 6d. per ton, with 2½ per cent. off for cash; making 17s. 10½d. per ton.—Mr. RICHARDS said the Portreath Company would sell coals, delivered to the mine, of equal quality for 17s. per ton.—The PURSER replied that they had no reason whatever to complain of the quality of the coals they were importing from the Portreath Coal Company. It was all that they could desire.—Mr. RICHARDS: But you are paying 10d. per ton more than the current prices. What do you burn a month?—The PURSER: About 300 tons.—Mr. RICHARDS: If you accept our offer you will save 15l. a month, or just 180l. a year.—The offer was not accepted, and the meeting then separated.—*Western Daily Mercury.*

WEST POLICE.—At a meeting of adventurers held at the mine on July 18 (Sir F. M. Williams, Bart., M.P., in the chair), the accounts showed a profit on the five months' working of 4000 shillings, or 2000 shillings per share was declared, carrying forward a balance of 59l. The costs altogether for the 20 weeks amounted to 3409l., including labour cost 2183l., merchants' bills to the end of April 921l., Perran Foundry Company, for 20 in. cylinder and boiler, 250l., and bank charges for eight months 35l.—about 4l. per month. The copper is credited at 945l., and the tinstone at 3015l. The dues altogether were 150l., for which the lords of St. D'y take 109l., and Sir F. M. Williams's proportion amounts to 41l. for the tin, on which 1-20th is paid; on copper the dues are 1-24th. Cpts. James Brown and George Johns are in future to have six guineas the month, instead of 5s. as heretofore, and thanks were given to Sir F. M. Williams for selecting them. They have 28 picks working on tribute by 70 men, varying in price from 3s. 6d. to 12s. in 1/2. The agents conclude a very satisfactory report by stating that their prospects are very promising for opening up a good mine.

[For remainder of Meetings see to-day's Journal.]

FOREIGN MINES.

ST. JOHN DEL REY.—Telegram from Morro Velho, dated Bahia, July 27: Produce 11 days (first division of July), 12,750 cists; yield 71 (7) cists per ton. Profit for the month of June, 7000l.

RICHMOND CONSOLIDATED.—Telegram: Week's run, 863,000.—R. Rickard, July 7: The shaft is down deep enough for a well below the 900; the shaftmen will now be occupied in timbering the shaft, and as soon as it is finished will begin cutting the 900 station. The 800 drift is about the same as last reported. The winze sinking below the 700 is down 40 ft., sunk in ore all the distance; bottom still in ore. No 1 slope, in back of the 600, has very much improved since last week; it is trending to the south-east—also widening. The 500 drift is now sinking, and the 400 is in ore; it is down 30 ft. The Lizette tunnel extension is in the same kind of ground. All other parts of the mine are without alteration since last reported on. The furnaces are working well, and smelting an average quantity of ore.

NEW PACIFIC.—Telegram from superintendent: Rich strike south cross-cut. TOLIMA.—The estimated value of the returns for the month of May last amounts to \$8520, obtained at a cost of \$6715; showing a gross profit of \$1805—300l. odd.

EBERHARDT AND AURORA.—The directors have received 27 bars of silver, value about 6000l.

SWEETLAND CREEK.—G. D. McLean, July 1: Washed in new tunnel. All other work progressing as on every day during the week. Papers of last run forwarded yesterday.

CEDAR CREEK (Gold).—J. B. Ludlum, July 6: I last had this pleasure on June 29, since when I can report as follows:—The Pacific claim is refitted and ready for water again; I am not yet in receipt of the certificate showing the product of last run. The Central claim continues washing, and is removing the gravel very fast considering its heavy character. The Yankee Badger we cleaned up on Monday last, as we were obliged to run almost entirely on the fine run gravel, which was too poor for our predecessors to drift out. I did not expect large returns, and was not disappointed. In my next I shall be enabled to give you a statement of the whole run, which commenced about May 1. The Yankee tunnel is being driven as fast as possible under existing circumstances. The claim washing above has been obliged to be off so frequently that much time has been lost through it, greatly retarding this work. During the week ending July 1 the drillers worked but 9½ shifts, firing six face shots, and advancing 29 feet. The total number of feet advanced during the month of June was 120, at a cost of 1200 shillings, or 12 shillings the shift of men. Not having much more than funds with which to do this work I hesitate about incurring any further indebtedness, consequently I am not driving it. During the month of June we dug a road leading into the claim, placed the hoisting works in position, laid the water-pipe, &c., and sunk 16 ft. in the hard cemented gravel; the whole costing \$460 30. The gravel at present is very hard, much worse than the average bed rock, but I think we will soon pass through the stratum.

L. L. (Gold and Silver).—L. Chalmers, July 3: Your telegram received. I have been in treaty for another mill, but it will not suit. I go to San Francisco to-

morrow to ascertain the cost of a mill, which I shall report. I have at last heard of a foreman, and go to Grass Valley to see him. Wire report just arrived. I am burning a kiln of brick for the furnace and boiler for the mill.

EXCHEQUER (Gold and Silver).—Lewis Chalmers, July 3: I have the honour to report, for the information of the board, that the engine-shaft is down 394 feet. The north drift, in the 300, is in 140 ft.; the lode is the full size of the drift, but not very good. The north drift in the 200 is in 472 ft.; the lode is 6 ft. wide, and a heavy stream of water coming from the face. The slope in the 200 ft. level is 35 ft. long and 25 ft. high. Some fine ore, and the lode looking stronger than at any time since we commenced to work on it. After long time wasted in fruitless correspondence endeavouring to get stopers, I am off to-morrow to Grass Valley, and shall visit the surveyor-general at San Francisco, and the receiver at Sacramento, to push on patents before I return. I grudge this trip very much, as I am wanted here very much at present. The mill-engine was hauled to the mine yesterday. The brick for the furnace will be all hauled to-morrow.

Extract from a letter received from Mr. J. J. Cooper, M.E., of the Coldstream Mine, Colorado, July 3: I went underground in the Exchequer, and was pleased to find it looking much better than when I inspected it in the summer. The lode in the 300 ft. drift is more settled and better defined than it was above, and they had a rich bunch of ore, which must be a new one, as they had none like it so near the shaft above. The 300 drift is not yet under the rich shoot in the 200; it will probably take another month to get under it. From this latter in the slope I broke a lump of the ore about 7 lb. in weight, and had a piece of it assayed by the territorial assayer here. It ran 191½ ozs. in silver and \$31 in gold per ton of 2000 lbs. This included quartz. Had I just picked out there it would have run much higher. The ore reserves in the mine have increased considerably since I was there last. I am still of opinion that the deeper you go down the more valuable the lode will become. Mr. Chalmers was very busy making preparations to put up the O'Hara furnace, which I hope will answer. I forgot to mention to you that I went to Virginia City to see the Comstock lode, for my own amusement. I showed the specimen of ore to some gentlemen in the hotel. One said "You have a very good specimen of Ophir ore." He did not know. I told him it was not Ophir, and he said it was exactly like it.

FRONTINO AND BOLIVIA (Gold).—June 3: The May profit will be \$7000, or nearly 1200l., from which will have to be deducted the general expenses in Medellin and London, amounting to about 150l.; leaving a net profit of 1040l. for the month. Mr. White states that the mines are in a very satisfactory condition.

LA MANCHE.—J. Nanarow, July 3: We cleared the mine of water on the 19th ult., since that time we have had all the miners we could get working underground in the 20, on a course of lead I value worth from 2 to 2½ tons per fathom. In the centre of the mine, in as fine and well defined a lode as has been seen in any part of the world, and before resuming work on the 20, we had a lode of 9 feet wide, and how much more I know not, but purpose cross-cutting to the north wall to ascertain its entire width as soon as an opportunity offers. I look on this as a good discovery for the future of the mine, the lode not being productive or near as wide in the 10 ft. level or level above. We have stalls put in in readiness for stopping in the 20 ft. level, both at Cooper's and McConchie's shafts, in good courses of lead ore, and shall begin to stop as soon as I can get miners, but they are very scarce at present, being now in the middle of the fishing season. Meantime I am picking all up as they come along, and I will leave some men to work the mine with the steam engine, which must turn out a prize ultimately. I can assure you I have every confidence in the mine if fairly developed. We are busy dressing up the lead which accumulated last winter, and shall go ahead as fast as possible with this and other necessary work; we have plenty of water to work all our machinery, which is in good condition now, and we only require to work one of our steam-engines by day to draw the lead from underground. My report shall be sent on regularly now every month from this. I congratulate you on the prospects of the mine.

MALABAR.—G. B. O'Reilly, June 19: The Mine: We are pushing on the work so as to resume washing as speedily as possible. Since writing on the 9th we have laid down 230 ft. of sluice above the bed rock, and in the direction of the eastern bank, and before resuming work on the 20, we had a lode of 12 ft. wide, and how much more I know not, but purpose cross-cutting to the north wall to ascertain its entire width as soon as an opportunity offers. I look on this as a good discovery for the future of the mine, the lode not being productive or near as wide in the 10 ft. level or level above. We have stalls put in in readiness for stopping in the 20 ft. level, both at Cooper's and McConchie's shafts, in good courses of lead ore, and shall begin to stop as soon as I can get miners, but they are very scarce at present, being now in the middle of the fishing season. Meantime I am picking all up as they come along, and I will leave some men to work the mine with the steam engine, which must turn out a prize ultimately. I can assure you I have every confidence in the mine if fairly developed. We are busy dressing up the lead which accumulated last winter, and shall go ahead as fast as possible with this and other necessary work; we have plenty of water to work all our machinery, which is in good condition now, and we only require to work one of our steam-engines by day to draw the lead from underground. My report shall be sent on regularly now every month from this. I congratulate you on the prospects of the mine.

MALPASO (Gold).—W. S. Welton, June 19: Since the clean-up on June 3 all the work had been directed towards the construction of a new bulkhead, and laying down more sluice boxes at the head, and re grading the sluice wherever required. The superintendent sums up the advantages to be obtained from constructing the new bulkhead as follows:—By changing the pipe to the new bulkhead 3500 ft. of ditch will be saved, including the long high flume, and that portion of the old ditch which is most out of repair and in the worst ground, and 20 ft. of extra fall will be gained. The whole of the above work I expect to have finished by the 25th inst., and then consider that the mine will be in a position to run with out let from breakages, the only break point remaining being the Pava flume.

TOLIMA.—The directors have received advices by the mail of July 26, of which the following is an abstract:—Frias: May returns, \$8520-1; expenses, \$7002-1¼, less improvements, \$886-6—\$6715-3½ = \$1804-5½, equal in sterling to 300l. 15s. 9d. The month's reports give 28 fms. 2 ft. 1 in. of ground expended, of which 12 fms. 2 ft. 1 in. were underground, leaving 16 fms. of productive ground. The underground agent states as follows:—Engine Shaft: This station is now 5 fms. below the 30, and the lode has improved considerably since last month. The branch of ore on the eastern side of this shaft is 6 in. wide, composed principally of galena and blende, and worth over 300 ozs. fine silver to the ton of ore; this is the same course of ore as we had above, which gave large quantities of mineral of good class. Should this continue in depth I believe we shall have a rich bunch of ore, and the expected results will be realised.

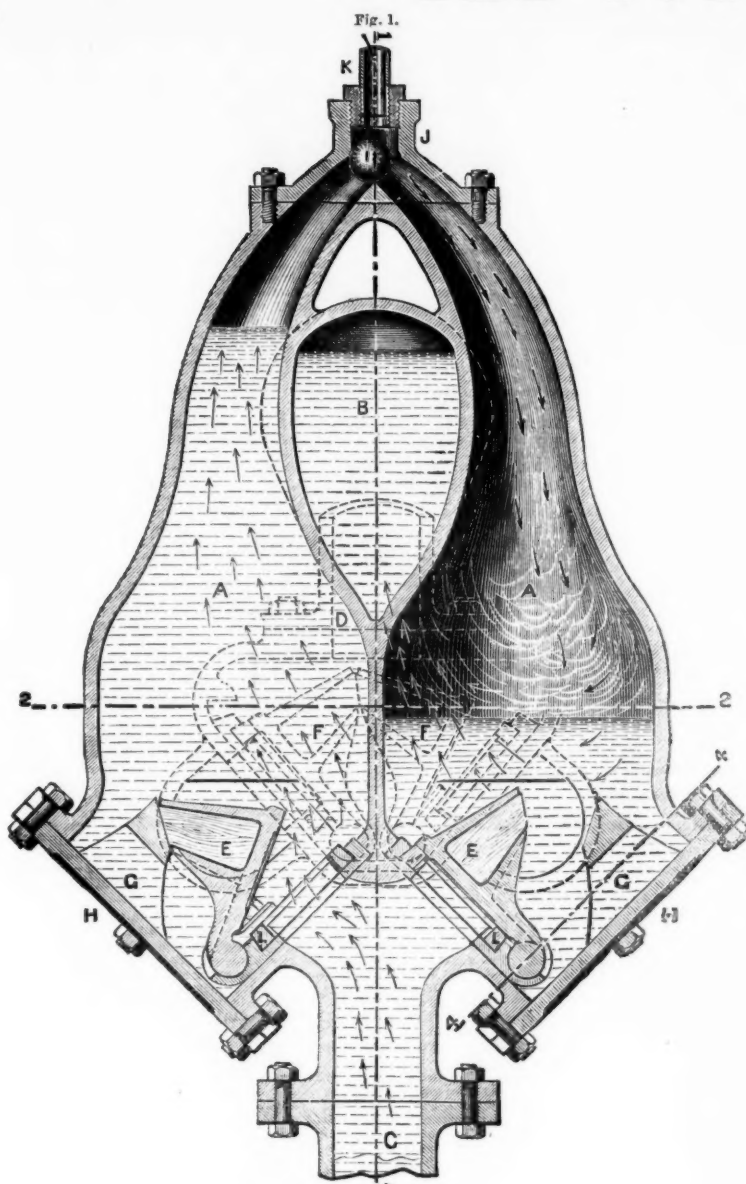
The 30 ft. Slope East: The slope east from this shaft is yielding rich ore. It is 15 ft. in length, and 3 fms. from the bottom of said shaft; this, of course, cannot be worked until the ground has been opened in the 40 ft. level.—The 30 ft. East End: We are driving this end in poor ground. A small string of quartz and carbonate of lime is at present the constituent of the lode, but as lime always accompanies rich ore I expect we are not very far from mineral ground, especially as the lode at the 20, about the same distance, has very good ore. The end has advanced 6 fms. 2 ft. from the fault that apparently impoverished the lode. The ground in the 30 west end seems more promising than last month, is easier for driving, and lets out a brave stream of water; however, as we have met with very little mineral above, on the 2 ft. level, we cannot safely say how long we shall have to drive before we come into mineral ground; the best mineral appears to be on the eastern portion of the mine. In the 30 ft. level, on Welton's lode, signs of mineral are apparent on the lode; no doubt we are arriving at the same bunch we had in the 10. I hope I shall be able to report shortly of having met with a good lode. The rise on the roof of this level is still producing a little mineral, but does not extend beyond the length of the rise. In the 20 east end there is a small ranch of blende mingled with marble, the ground is very hard, and the upper Spanish workings still continue to show signs of blende; the Spaniards have taken the best ore above. We have to depend in this station on the discovery that may be made by the 30. In the west end, in the 20, the ore discovered last month has not become solid as yet, but there is a good chance of coming into the mineral ground we have been expecting for some time past. The end is producing ore for the stamps.

In the 20 ft. level end, Welton, the prospects of the ground are favourable, as the ground begins to show indications of mineral. We have been taken away a block of mineral from the roof of this level, chiefly a good class of blende. The winze at the bottom of this level is producing rich ore, and continues rich in depth.—Remarks: The prospects of the mine in general are promising. I expect we shall have several stations producing ore shortly.—Surface Department: There is very little to report this month. We have not hurried the building of the machinery on hand, waiting until the mine yields sufficiently to meet the expenditure. The masons' work of the wheel-pit is advancing as rapidly as circumstances allow.—Alto Mines: The ditch has advanced nearly to No. 6 stream, but cannot be completed for a short time, due to a difficult precipice that had to be passed on launders for the conveyance of the water.—E. S. JONES.

[For remainder of Foreign Mines, see to-day's Journal.]

THREE HUNDRED MEN IMPRISONED IN A COAL MINE.—Great excitement has been caused in the colliery districts of Pendlebury and Clifton, about four miles from Manchester, owing to an extraordinary accident which happened at the Clifton Hall Colliery, owned by Messrs. A. Knowles and Co. (Limited): 420 men and boys are employed in the underground works of the pit, which is one of the deepest in the district. The cause of the accident was the collision of two cages meeting midway down the shaft, thus cutting off all communication with the head workings, and 330 men and boys were in consequence imprisoned for nearly 40 hours. It appears that the men and boys went down the mine on a day-shift on Friday, and continued working until the afternoon. At that time, by mistake of an engineman, who began winding up without obtaining of proper signals from below, a cage, which was properly loaded with coal, was dragged up, and one of the wagons, which was only partially placed upon it, ripped up the arch of the pit and broke the wooden guide rods. The coal began falling out of the wagons, and the men at the bottom were unable in consequence of this to reach the signalling rod before it was snapped by the accident which immediately happened. The ascending cage proceeded, ripping the uprights until when in the centre of the shaft it met the empty cage returning down. A collision ensued, the result of which was that they became entangled, and the rope from the engine snapped with the tension and was thrown with great violence over the head-work of the pit. This was the first indication on the bank that an accident had occurred, and great alarm was occasioned. Instructed by Mr. Barker, the manager, two men descended the shaft by a temporary apparatus, which was as speedily as possible fitted up, and Mr. Barker himself, subsequently, at great personal risk, ventured down the pit to see if any lives had been lost. Hesoon satisfied himself that the cages had only contained coals. Men were set to work to clear the shaft, and eventually one of the cages fell into the dip hole at the bottom of the pit. It was not until nine o'clock, however, on Saturday morning that communication with the men below could be opened. The scene in the workings during the long nights' waiting was very exciting. The men were kept in very fair order by two experienced underlookers who happened to be below at the time of the accident. They were quite unaware of the nature of the block in the shaft, or of the means which were being taken for their rescue. But assurance of safety was maintained by the fact that ventilation of the pit continued perfect. As many of the men were slenderly provided with food, they became ravenously hungry, and when, in the course of Saturday, supplies of bread and cheese were sent down into the mine a scene of the most exciting description took place. The food was served out to the men from the cabin window, but in their excitement and impatience the men broke into the cabin and helped themselves. On Friday evening and Saturday the wives and friends of the imprisoned colliers assembled on the pit-head, and in most instances brought provisions, besides which several ladders were sent down by the proprietors of the pit. When communication was first made with below several persons were raised by the temporary apparatus, but this had to be given up, as it was very dangerous. Every assurance was given to the friends of the men below that nothing likely to risk life had occurred, and, happily, shortly before midnight on Saturday, the shaft was completely cleared, and the men, in twelves, were all drawn out of the pit, with the exception of one, who slept in the workings, and who was brought up the following morning.

THE PULSOMETER PUMP.



THE PULSOMETER PUMP.

In accordance with the promise given last year we are now enabled to publish sectional drawings, &c., of the Pulsometer Pump.

The principle of raising liquids by the direct action of steam upon their surfaces out of chambers into which it is lifted by atmospheric pressure, such as takes place in the Pulsometer, carries us back to the first really useful engine that was made; for in Capt. Savery's engine we already find the operation of steam to be two-fold—in exerting direct pressure from its elasticity, and in the direct consequence of its condensation, so affording a vacuum. It is beyond our present purport to follow up the history filling up the interval of 170 years, which elapsed between Savery and Hall, the inventors of the present Pulsometer, for it is more or less known that almost every successive improvement was directed to the raising of water and other liquids by the action of steam upon a piston, and that the idea of utilising the direct pressure of the steam or the liquid to be raised was practically abandoned till within a very few years.

Therefore, proceeding to the descriptive portion of the Pulsometer as we now find it improved, it consists mainly of a single casting or body, which is composed of two chambers, A A (see Figs. 1 and 3), joined side by side, with tapering necks bent towards each other. It is surmounted by another casting, called the neck (J), accurately fitted and bolted to it, in which the two passages terminate in a common steam chamber, wherein the ball-valve (I) is fitted so as to be capable of moving about between seats formed in the junction. Downwards the chambers (A A) are connected with the induction passage (C), wherein the inlet valves (E E) are arranged. These inlet-valves are constructed in different patterns; thus, the metal flap-valve, with turned surface, beating on a hard wooden shoe is shown in Fig. 1, with guards (G G), which control the amount of opening of these valves (E E), whilst another favourite form of inlet valve is represented in Fig. 3. In the latter it will be seen balls are used instead of flaps, and it is claimed that no better joint could be desired than is so formed by a spherical metal valve rolling into a wooden or metal seating. In addition to these patterns the hollow Perreux valve is also recommended for the same purpose by the makers.

A discharge chamber, common to both chambers, and leading to the discharge-pipe (D) is provided, and this also contains one or two valves (F F) according to the purpose to be fulfilled by the pump. The same principle which has been adopted in the pump-valves proper has also been introduced in the foot and back pressure valves. The large side opening, with faced flange, to which the cover is bolted, gives ready access to the valve in the event of any foreign substance becoming lodged there. The air-chamber (B), made in the same casting as the chambers, and communicates with the suction. Sometimes it is divided by a diaphragm, and one portion communicates with the suction, and the other with the delivery. The induction and discharge chambers are closed by covers (H H), accurately fitted to the outlets by planed joints, and readily removed when access to the valves is required; and small air-cocks are screwed into the cylinders and air-chamber, for purposes described later on. Figs. 1 and 3 show a vertical section through the water-chamber, whereas Fig. 3 gives a similar section through the air-chamber of the Pulsometer with interchangeable valves.

With this general description of the construction of the pump we may proceed to offer the following remarks on the working action of the Pulsometer, which have been supplied to us by the Pulsometer Company of London:—The pump being filled with water, either by pouring water through the opening in the chamber, or by drawing the charge, is ready for work. Steam being next admitted through the steam-pipe (K), by opening to a small extent the stop-valve, passes down that side of the steam neck, which is left open to it by the position of the steam ball, and presses upon the small surface of water in the chamber which is exposed to it, depressing it without any agitation, and, consequently, with but very slight condensation, so driving it through the discharge opening and valve into the rising main. The moment that the level of the water is as low as the orifice which leads to the discharge the steam blows through with a certain amount of violence, and, being brought into intimate contact with the water, condensation takes place, and a vacuum is, in consequence, so rapidly formed in the just-emptied chamber that the steam ball is pulled over into the seat opposite to that which it

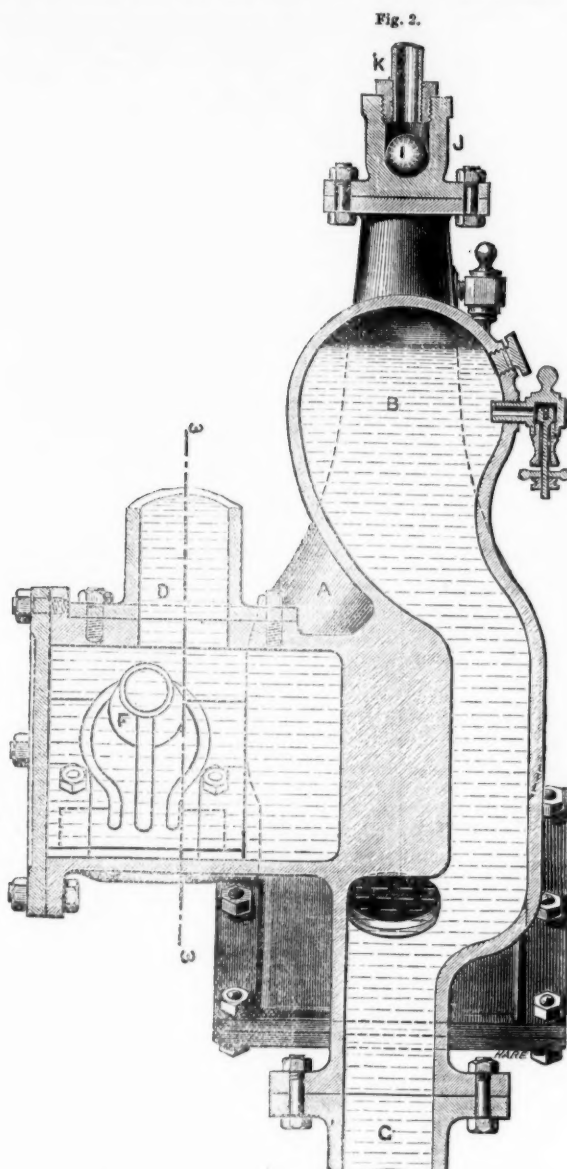


Fig. 2.



Fig. 4.

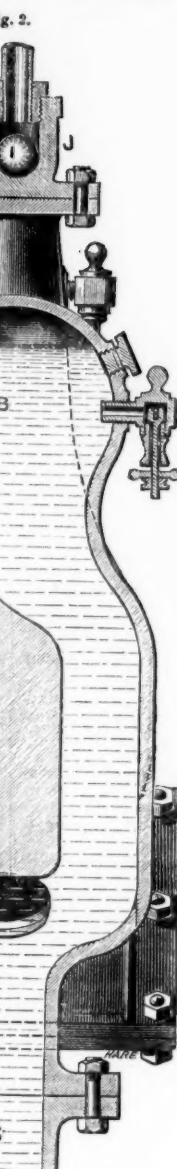


Fig. 3.

able circumstances, very nearly continuous. The forementioned air-cocks are introduced to prevent the too rapid filling of the chambers on low lifts and for other purposes, and it is asserted that a very little practice will enable any unskilled workman or boy to set them by the milled nut that the best effects may be produced.

Many situations will unquestionably suggest themselves as suitable for the employment of a steam-pump possessing the advantages that the Pulsometer does; but we must confine ourselves here to its adaptability in mining operations; accordingly the annexed Fig. 4 represents the Pulsometer fitted up in a mine. The small space it occupies, coupled with its dispensing with costly foundations of any kind, since all that is absolutely needful in such cases is to provide a boiler aboveground, and to put a derrick above the shaft, with a chain and a pair of blocks, which facts justify the portability claimed for the Pulsometer; or, again, the perfect ease with which it will pump water full of sand, grit, and chips without choking up; or the entire absence of these sources of maintenance by not requiring any oil, tallow, or packing. All these advantages we believe cannot fail to attract attention in all kinds of subterranean workings; and as we learn that these advantages are not counterbalanced by a large expenditure of steam when compared with the donkey pumps of the newest principle, as proved, for instance, on a steamer where the Pulsometer pumped the ballast water out in 3½ hours, while the donkey pump, with the same size of steam-pump, took 8 hours, we are inclined to believe that the Pulsometer will not be long before making itself a general favourite in our mining operations. We have not yet had the opportunity of ascertaining the relative comparison existing in the Pulsometer type between steam expended and work done; but it should be noted that the success of the Pulsometer is, in a great measure, due to the arrangements for preventing the steam from being largely condensed by contact with the water or other liquid which is to be pumped during the emptying of the chamber. To this effect the peculiar form of the chambers greatly contributes; but it is also believed that the admission of air (through the air-cocks), which afterwards somewhat condensed by the rising of the water, tends to prevent the ultimate contact of the steam and water.

RAILWAY STATISTICS OF THE UNITED STATES.—The current year's edition of Poor's well-known "Manual of the Railroads of the United States"—that for 1876-77—has just been issued (London: H. V. and H. W. Poor, Gracechurch-street), and affords really all the information upon the subject which need be desired. The present volume is, moreover, rendered more than usually interesting, owing to a general review of the subject of the book being given by way of introduction. The first locomotive ever used in the United States was one imported from England in 1829, constructed by Foster, Rastrick, and Co., of Stourbridge, and called the "Stourbridge Lion." The engine was imported for use on the Carbonado and Honesdale Railroad, belonging to the Delaware and Hudson Canal Company, and extending from their canal towards the mines. The first locomotive built in the United States and the second in use there was made in the West Point Foundry Works, New York, in 1830. It was called "The Best Friend of Charleston," having been built for the South Carolina Railroad, then in course of construction. The first railway was opened in Great Britain on Sept. 27, 1825, and the United States was the next country which had the benefit of a railroad, their first line being opened on April 17, 1825. The Austro-Hungarian Empire comes next, the first line there being opened on Sept. 30, 1825; the first in France on the following day. In Belgium the first, a 12-mile line, was opened on May 8, 1835; and on Dec. 7 of the same year a 4-mile line was opened in Germany. The first Australian line was opened in Victoria on Sept. 18, 1854; and in New South Wales a line was opened on May 23, 1855. Interesting little items of this kind might be extracted to almost any number, and none of the 1000 pages of which the volume consists can be turned to without something interesting and instructive being found. As a record of facts, the Manual is invaluable; and it may well be consulted by any who appreciate the importance of railway construction and development.

FOREIGN MINING AND METALLURGY.

There has been scarcely any variation in prices in the French coal trade. The competition of English coal with French and Belgian coal is considered to be increasing in France, and it is thought that when the Seine has been rendered more navigable, so that transport facilities are increased, Belgian coal will maintain its position with increasing difficulty upon some of the French markets. The colliery proprietors of the Ruhr basin are also making more and more efforts to obtain a firmer footing in the French coal consuming centres, and this, again, must be regarded as an adverse circumstance by Belgian colliery proprietors who must bestir themselves unless they are content to lose what has hitherto been one of the most profitable foreign outlets for their products.

Reviewing the condition of the continental iron trade, the "Neve Freie Presse" remarks that affairs have become still worse during the past few weeks, as the contracts for railway materials, which have for a long time past been expected, are still held back; and the demand for iron has, therefore, been restricted to only the most pressing requirements. In the Austrian works the business is of a very insignificant character, and many establishments are being carried on at an actual loss, while stocks are accumulating. The Swedish iron trade is also very quiet. In Belgium there have been symptoms of revival, but the hope is still deferred. In Germany prices for a long time past have only barely covered the cost of material and wages, while heavy stocks tend to depress them still further.

The condition of the Belgian iron trade does not improve; if any change has taken place it is, indeed, rather of an adverse character than otherwise. The Couillet Company, one of the most important mechanical and metallurgical concerns in Belgium, has just discharged 150 workmen; another not less considerable undertaking has also blown out some of its furnaces. Everywhere production appears for the time being to be in excess of the demand, although prices have receded to a point at which they leave little or no profit. A proof of the general want of work is found in the rapidity with which orders are executed. Thus, MM. Bellebroid and Lévêque, of Liège, have just constructed in three months an iron bridge 1000 ft. long, weighing 600 tons, and sent to Fontaniva for an Italian Railway Company. The rates charged for the conveyance of rails over the lines of Alsace and Lorraine have been advanced 12 per cent.; the rates for general goods have been increased at the same time 20 per cent. The Creusot Works have just constructed some locomotives upon the Mallet system for a line of local interest from Bayonne to Biarritz. M. Mallet has slightly modified and introduced the compound system, hitherto confined to marine engines only. The results obtained with the engines just made at Creusot are stated to have been satisfactory, the engines having worked regularly, while the production of steam was steady and constant. A contract has just been let for the ironworks of two viaducts about to be erected at Schaerbeck. The Haine Saint-Pierre Forges, Iron-works, and Foundries Company tendered at 255%; this was the lowest tender submitted, and it was 28 per cent. below the highest tender, which was that of MM. Nicaise and Delcuve, of La Louvière. The Cologne and Minden Railway Company will let next month, at Cologne, a contract for 4000 tons of cast-steel rails.

The condition of the French iron trade still remains much the same. The position of the trade is, however, considered to have improved in this sense, that apprehensions are no longer entertained as to the renewal of treaties of commerce, as it is considered nearly certain that the whole of the present duties will be maintained. Apart from this probability, the effects of which will not be felt immediately, nothing has occurred to modify the persistent depression of the markets. The French Universal Exhibition of 1878 will not be postponed, as had been feared, and some industrials are already preparing for it. They are hoping that the exhibition buildings will be almost entirely constructed of iron, and that their works will obtain in consequence a valuable contingent of orders.

Deliveries of coal in Belgium appear to be declining almost from day to day. Few transactions are reported, and the markets remain without interest. No change or improvement is anticipated for the next two months; then a demand for the winter may somewhat ameliorate the aspect of affairs. A fire broke out at the Hazard Colliery, at Micheroux, a few days since, and threatened to occasion considerable damage; it was, however, promptly subdued, and no loss of life took place, the men being all brought up from below with all possible speed. The Kessales Collieries Company will pay on Aug. 1 a first dividend for 1876, at the rate of 17. 8s. per share. The Noe-Sart-Culpart Collieries Company has commenced the payment of an interim dividend for 1876, at the rate of 12s. per share. The Torte-Taille Colliery Company, which was organised in June, 1875, reports an expenditure of 2941l. on preparatory works.

The Paris copper market has remained without animation, and prices have been tending downwards. Chilean bars, delivered at Havre, has brought 77l. per ton; ditto ordinary descriptions, 75l. per ton; ditto in ingots, 78l. per ton; English tough cake, 78l. per ton; and pure Corocoro mineral, 78l. per ton. Upon the Marseilles copper market prices have generally continued feeble. The aspect of the German copper markets has scarcely varied. At Paris transactions in tin are nearly nil; Banca has made 82l.; Straits, 79l.; and English, 80l. per ton. At Marseilles tin has been scarcely so well held, in consequence of heavy arrivals from Australia. Advices from Rotterdam report that Banca has been extremely quiet upon that market. Some transactions are reported at 44½ fls.; Billiton has continued in good demand, and some rather considerable transactions are reported at 43½ fls., with delivery in September and October. The German tin markets have generally ruled quiet. French lead has made 20l. 12s. per ton at Paris; a similar price has been current for Spanish and English; Belgian and German has made 20l. 16s. per ton. At Marseilles the position of the lead market has not much improved. The German lead markets have also been very quiet. At Paris, Silesian zinc, delivered at Havre, has brought 24l. per ton, while other good marks have made 23l. 12s. per ton. There has been little change in zinc at Marseilles; rolled Vieille Montagne has brought 32l. per ton. Upon the Breslau market zinc has ruled quiet.

EXPORTS OF COAL.—By the Monthly Circular of Messrs. Higginson, of Liverpool, we learn the quantity of coal exported in June was 1,260,673 tons, against 1,311,046 tons in the corresponding month of 1875, showing an increase of 49,627 tons. The particulars are—From the Northern Ports, 650,095 tons; Yorkshire, 68,696 tons; London, 8532 tons; Liverpool, 72,032 tons; Severn Ports, 425,133 tons; and Scotch Ports, 136,185 tons. The increase was—Northern Ports, 910 tons; London, 4277 tons; Liverpool, 12,433 tons; Severn Ports, 63,157 tons. The decrease—Yorkshire, 8911 tons; Scotch Ports, 22,239 tons. Total, Jan. to June, 1876, 6,765,022 tons; Jan. to June, 1875, 5,794,280 tons; increase, 870,742 tons.

IMPROVED SAFETY-LAMP.—The merits claimed for the new safety-lamp invented by Mr. Alexander Goebel (formerly manager of the Grande Machine à Feu Collieries at Dour), and exhibited by him at the Exhibition of Hygiene, now open at Brussels, as compared with the Mueseler, are that it is not extinguished by rapid movement in the air or in a dusty place, that the gauze is less easily choked, and that it is not put out by being accidentally turned on one side. It is remarked that the extreme sensibility of the Mueseler adds nothing to its safety, since it is due to causes with which the fire-damp has nothing to do; whilst his lamp is safer, diffuses a good light in all directions, and has the great advantage of indicating the presence of fire-damp by the elongation of the flame in the same way as the Davy.

HOLLOWAY'S OINTMENT.—Bad legs, wounds, and all descriptions of sores are immediately cured by the power and diligent use of these inestimable preparations. To attempt to cure bad legs by plastering the edges of the wound together is a folly; for, should the skin unite, a baggy diseased condition remains underneath, to break out with tenfold fury in a few days. The only rational and perfect treatment is to reduce the inflammation in and about the wound, to soothe the neighbouring nerves, to cool the heated blood as it courses along its vessels, and to render the thin, watery, ichorous discharge consistent and healthy. Happily for suffering humanity, Holloway's ointment, assisted by judicious doses of his pills, accomplishes these ends with unfailing certainty.

BLAKE'S PATENT STEAM PUMP.

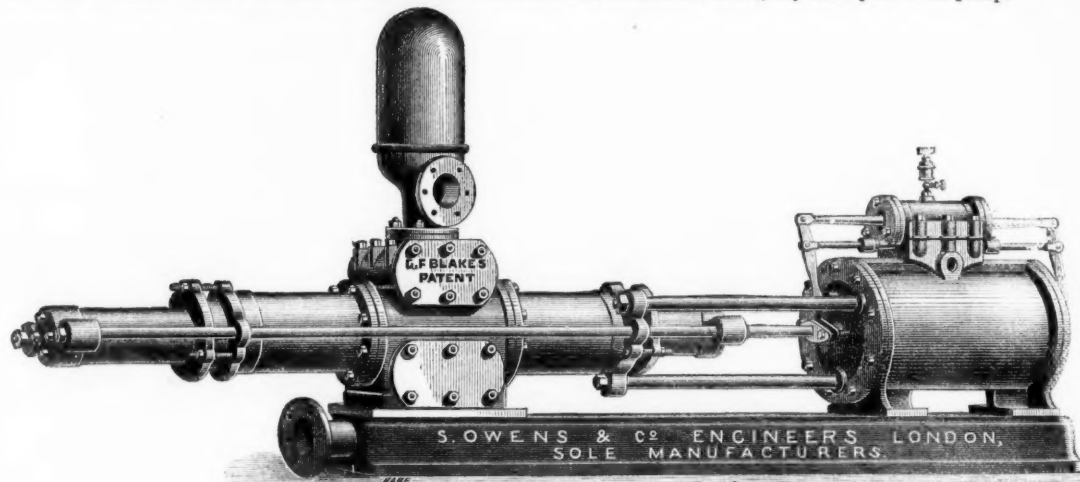
MORE THAN 8000 IN USE.

SOLE MAKERS FOR GREAT BRITAIN,

S. OWENS & CO.,

Hydraulic and General Engineers, Whitefriars-street, London;
And at 195, Buchanan-street, Glasgow (W. HUME, AGENT).

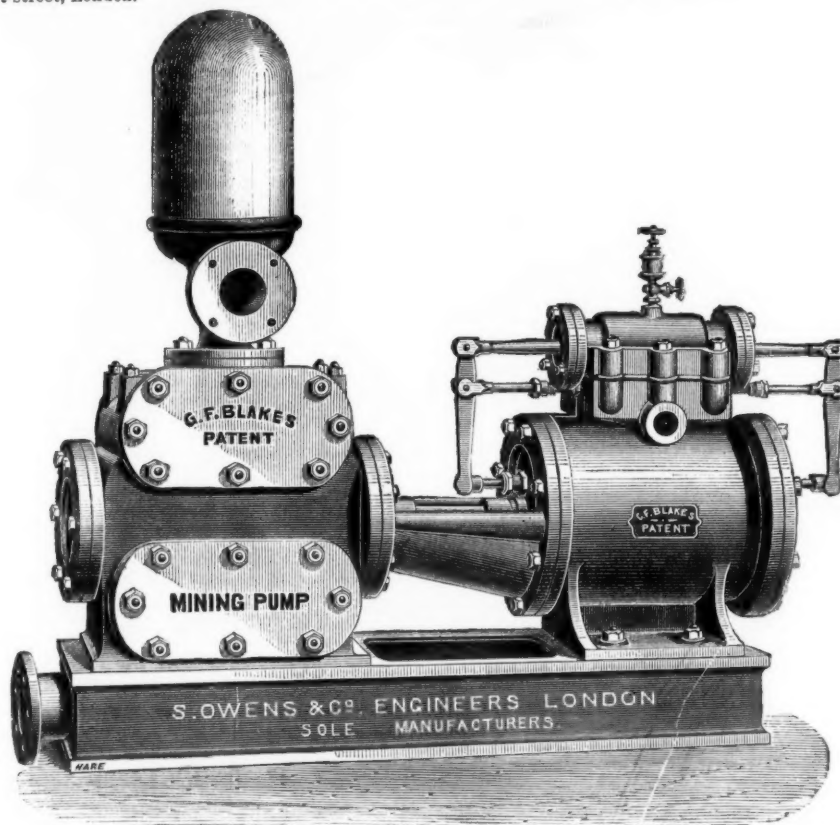
These PUMPS from their SIMPLICITY, RELIABILITY, DURABILITY, and ECONOMY are SPECIALLY SUITED FOR MINING PURPOSES, where large quantities of water require to be raised from great or medium depths with CERTAINTY. They are double-action in their construction, throwing a constant stream of water, can be made of any stroke to suit the space in which they have to work, can be arranged with any combination of steam and water cylinders to suit the pressure and lift against which it is desired to work them, are made of the very best materials and highest class of workmanship, and all working parts can be readily got at by any ordinary workman, and replaced if necessary by a duplicate part (all such being interchangeable) in the shortest possible time. For situations where gritty and sandy water has to be pumped the DOUBLE-PLUNGER PATTERN is recommended. Where space is limited the PISTON PUMP is better suited, a novel feature of which is the PATENT REMOVEABLE LINING, which can be removed in a few minutes and substituted with a new one, without disturbing any other part of the pump.



Blake's Improved Double-plunger Steam Pump.

S. OWENS AND CO.,

In placing the BLAKE STEAM PUMP before the mining world, believe they are offering the BEST, MOST RELIABLE, and ECONOMICAL PUMP that has yet been made, and solicit an inspection of various sizes in operation at their works, Whitefriars-street, Fleet-street, London.



Blake's Improved Mining Pump, with Patent Removeable Lining to Pump Cylinder,

Any combination of these Pumps may be had to suit circumstances. The following are some of the SIZES SUITABLE FOR MINING PURPOSES:—

Dia. of steam cylinders.. In.	12	12	12	12	14	14	14	16	16	16	16	18	18	18	18	20	20	20	20	24	24
Dia. of water cylinders.. In.	3	4	5	6	4	5	6	4	5	6	8	4	5	6	8	5	7	8	9	6	8
Length of stroke	18	18	18	24	24	24	24	24	24	24	24	30	30	30	30	30	30	36	36	36	42
No. of strokes per minute..	30	30	30	30	25	25	25	22	22	22	22	22	22	22	22	20	20	17	17	17	15
Quantity in gallons per hour, approximately ...	1440	2610	4200	5910	2040	4620	6300	2646	4158	5940	10620	2646	5160	7500	13260	4586	9000	12360	15660	6720	20

PRICES FOR THE ABOVE, OR ANY SPECIAL SIZE, AND ILLUSTRATED CATALOGUES FURNISHED ON APPLICATION.

PATENT CONDENSORS

Can be supplied for any size pump to effect a saving of fully 30 per cent. in the consumption of fuel, greatly increasing their efficiency

The Blake Pump will work under water, and as efficiently with compressed air as with steam.

BLAKE'S DONKEY PUMPS FOR FEEDING BOILERS KEPT IN STOCK.



PARIS EXHIBITION, 1867.



VIENNA EXHIBITION, 1873.



LONDON EXHIBITION, 1874.

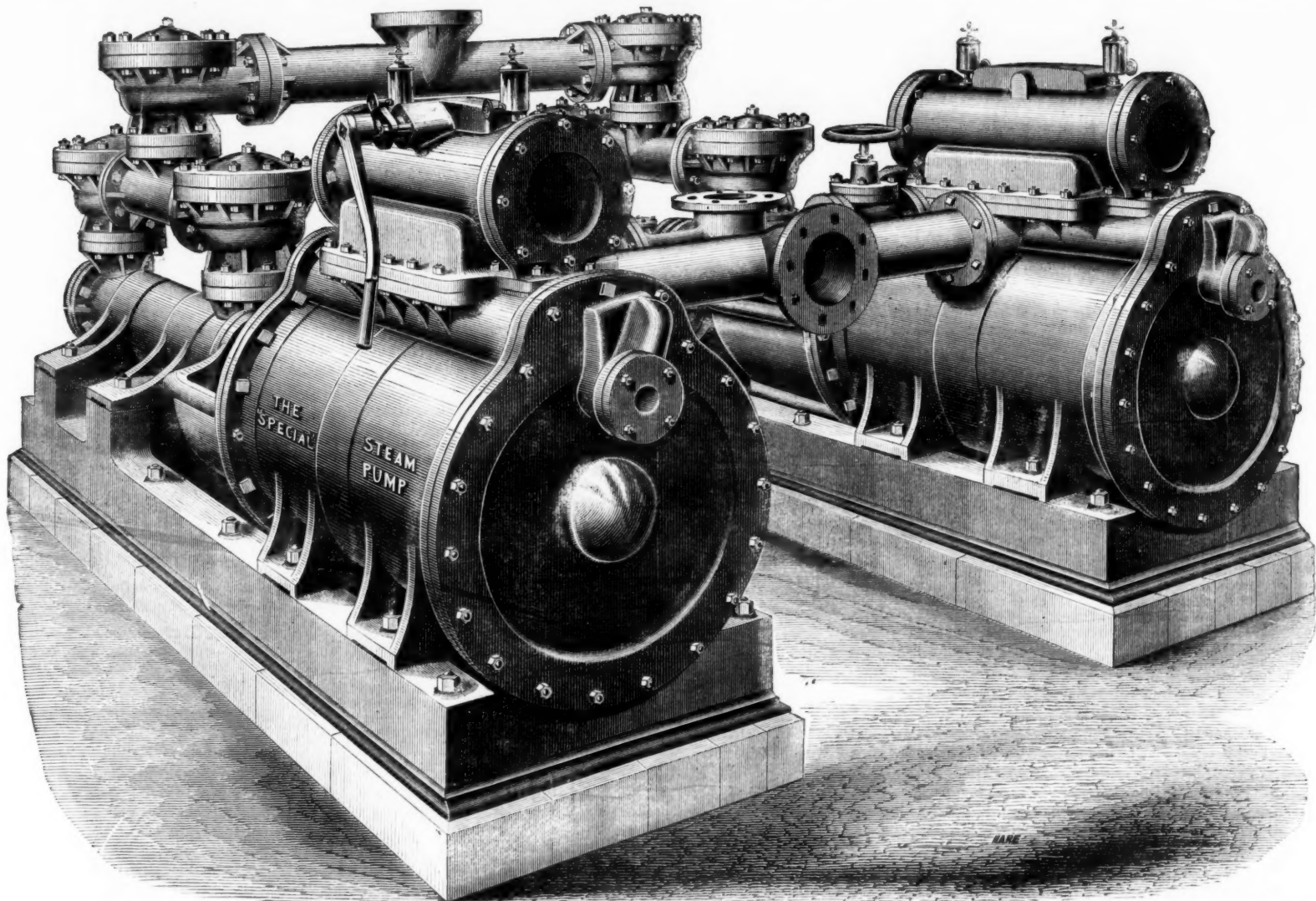


CORNWALL POLYTECHNIC SOCIETY, 1867 and 1873.

TANGYE BROTHERS AND HOLMAN,
10, LAURENCE POUNTNEY LANE, LONDON, E.C.,
AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO

THE "SPECIAL" DIRECT-ACTING STEAM PUMP.
OVER 12,000 IN USE.

SUCCESSFULLY ADOPTED IN A LARGE NUMBER OF MINES IN THIS COUNTRY AND ABROAD.



PAIR OF THE "SPECIAL" DIRECT-ACTING STEAM PUMPS SUITABLE FOR HIGH LIFTS IN MINES, SIMILAR TO MANY SUPPLIED BY TANGYE BROTHERS AND HOLMAN.

The following extracts from a letter, received by Tangye Brothers and Holman, from J. Bigland, Esq., dated Feb. 25, 1875, refers to a "Special" Direct-acting Steam Pumping Engine supplied four years ago to Messrs. Joseph Pease and Partners, for the Adelaide Colliery, Bishop Auckland. The engine is throwing about 8000 gallons per hour, 1040 feet high, in one direct lift:—
"The underground pumping engine at Adelaide Colliery is working night and day. It does its work satisfactorily, and gives us very little trouble. Some of the cup leathers which form the plunger packing have worked three months. The working barrel is in beautiful condition. The average duration of the valve seats is about eight months; they work and keep tight as long as there is a bit of them left. I expect the valves (Holman's patent) and the buffers will last as long as the colliery."

Extract from a letter received by Tangye Brothers and Holman from W. H. Eagland, Esq., dated Feb. 27, 1875, in reference to a "Special" Direct-acting Steam Pumping Engine supplied two years ago to the West Yorkshire Iron and Coal Company near Leeds, to throw 16,000 gallons per hour, 465 feet high in one direct lift:—
"It is at work night and day. Our man goes down to the pump twice a day (Ten A.M. and Four P.M.), to supply the fallow cups. After this it is left every day till he comes next morning, when he goes down again at Ten A.M. as before. The only repairs the pump has had for 12 months are one bucket, which had worked since we got the pump, and one valve seat, but no valve, so it has cost very little. Its first lift is 70 yards perpendicular, then the water passes up pipes for half a mile, ascending another 70 yards, and then another perpendicular pipe of 15 yards—total, 55 yards vertical height."

Extract from the Official Report of the Commission of the German Empire on the Vienna Exhibition of the 1873, treating on Pumping Engines:—
"Contrary to these older pumping engines exhibited, there is now nearly everywhere the opinion established that the ('SPECIAL') pumping engines placed underground, which are made on A. S. Cameron's principle by Messrs. Tangye, are preferable to all. They do much duty combined with great compactness. They dispense entirely with the troublesome rod arrangement, giving often rise to deep pages, so that they will be applied shortly to a great extent, and are already in use in many localities. There is no doubt that this is in every respect practical system will command a general adaptation."

200 SIZES AND COMBINATIONS OF THESE PUMPS ARE NOW MADE.

The following are a few of the Sizes for High Lifts in Mines:—

Diameter of Steam Cylinder	In.	7	8	9	9	10	10	12	12	12	14	14	14	16	16	16	16	18	18	18	18	21	21	21
Ditto of Water Cylinder	In.	3	3	3	4	3	4	3	4	5	4	5	6	4	5	6	7	5	6	7	8	5	6	7
Length of stroke	In.	24	24	24	24	36	24	36	36	36	36	36	36	36	36	36	36	48	36	36	36	48	48	36
Gallons per hour approximate		1830	1830	1830	3250	1830	3250	1830	3250	5070	3250	5070	7330	3250	5070	7330	9750	5070	7330	9750	13,000	5070	7330	9750
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump		325	425	540	300	665	375	960	540	345	735	470	330	960	615	426	312	775	540	400	300	1058	740	540

CONTINUED.

Diameter of Steam Cylinder	In.	21	21	21	24	24	24	24	26	26	26	26	26	30	30	30	30	30	32	32	32	32	32	32
Ditto of Water Cylinder	In.	8	9	10	6	7	8	9	10	7	8	9	10	12	8	9	10	12	14	8	9	10	12	14
Length of stroke	In.	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Gallons per hour approximate		13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	9750	13,000	16,519	20,000	30,000	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump		413	326	264	960	700	540	427	345	827	633	500	405	282	840	665	540	375	275	960	758	625	426	313

PRICES OF THE ABOVE ON APPLICATION.—FOR SIZES AND PRICES OF PUMPS FOR LOWER LIFTS SEE SEPARATE LIST.

HOLMAN'S PATENT CONDENSER will be found a great acquisition to all kinds of Steam Pumps, as not only is the exhaust steam completely condensed, and the annoyance from same blowing off entirely got rid of, but a vacuum is obtained in the steam cylinder saving from 20 to 50 per cent. in fuel, and increasing to a considerable extent the economy and efficiency of the Pump.

NORTH OF ENGLAND HOUSE ... TANGYE BROTHERS AND RAKE, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.
SOUTH WALES HOUSE... TANGYE BROTHERS AND STEEL, Tredegar Place, NEWPORT, Mon.; and Oxford Buildings, SWANSEA.

PATENT IMPROVED ORE WASHING & DRESSING MACHINES.

THE SANDYCROFT FOUNDRY & ENGINE WORKS CO. (LIMITED), NEAR CHESTER

LATE THE MOLD FOUNDRY CO. (ESTABLISHED 1838).

SOLE MAKERS IN GREAT BRITAIN.

HUNDREDS IN USE.

FULL PARTICULARS,
PHOTOGRAPHS, TESTIMONIALS, AND PRICES,
UPON APPLICATION.

Will supply Designs, and all the necessary Plant for laying out
Dressing Floors; also

MANUFACTURERS OF EVERY VARIETY OF

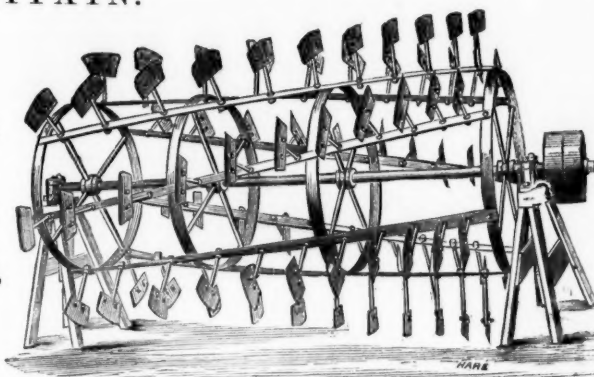
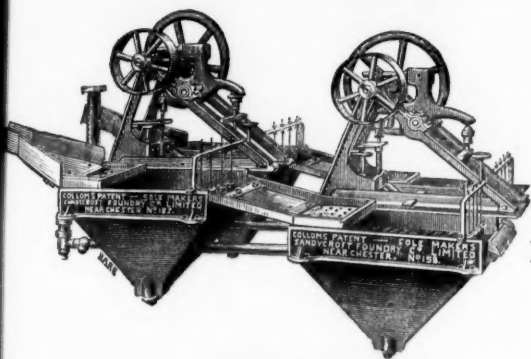
MINING MACHINERY

PUMPING & WINDING ENGINES,

PITWORK, CRUSHING MILLS,

ROLLS

OF PECULIARLY HARD AND TOUGH MIXTURE
&c., &c.



COLLON'S PATENT AUTOMATIC ORE WASHING MACHINE, working at the following and
many other Lead, Copper, Blende, and Tin Mines:—Great L'key, Cape Copper, Pontgibaud, Linares, Ala-
millos, West Tolgus, Lisburne, Minera Halvans, Snailbeach, &c.; and also at Messrs. Vivian and Sons'
Works, Swansea.

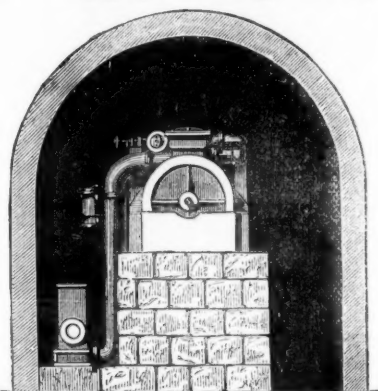
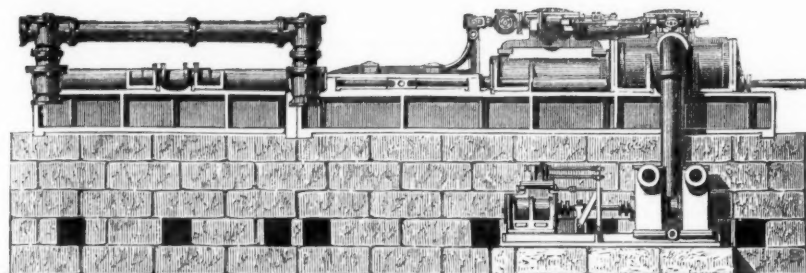
PATENT IMPELLER, OR KNIFE BUDDLE, in use at the following and many other Lead,
Copper, Blende, and Tin Mines:—The Van, Roman Gravels, Tankerville, Ladywell, Lisburne, East
Black Craig, Old Treburgett, Penhale & Barton, Bog, Linares, Fortuna, Alamillos, Minera Halvans, &c.

LONDON OFFICE: 6, QUEEN STREET PLACE, E.C.

HATHORN, DAVIS, CAMPBELL, AND DAVEY,

MAKERS OF

The Differential Pumping Engine, Hydraulic Pumping Engines, Cornish Engines, Differential
Blowing Engines, Compound Rotative Engines, the Separate Condenser, Hydraulic Machinery,
Mining Plant of all kinds, and Machinery for Water Supply, Irrigation, &c.



THE COMPOUND DIFFERENTIAL ENGINE AND FORCE PUMPS,

With Separate Condenser, as applied Underground, forcing 700 gallons per minute 920 feet high.

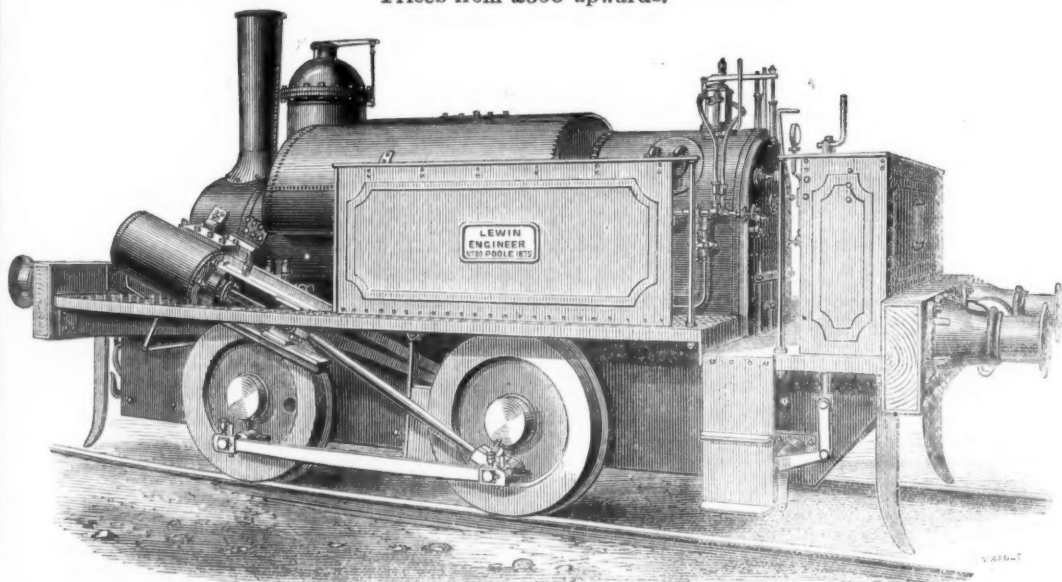
SUN FOUNDRY, LEEDS.

FURTHER PARTICULARS ON APPLICATION

LEWIN, POOLE, DORSET.

Speciality in cheap colliery and contractors' Locomotives, and
very small Locomotives for replacing Horses.

Prices from £300 upwards.



PORTABLE FIXED AND VERTICAL ENGINES.
WINDING AND PUMPING GEAR.

The above represents LEWIN'S 10 by 18 DIRECT-ACTING LOCOMOTIVE, taken from a photo of one on a 4 ft. 8½ in. gauge.

PATENT

"INGERSOLL ROCK DRILL,"

LE GROS AND CO.,

60, Queen Victoria Street, London, E.C.

5, PARK PLACE, NEW YORK, U.S.A.



We claim 40 per
cent. greater effec-
tive drilling
power, and offer
to compete with
any machine
of its
class.

See following ex-
tracts from the re-
ports of Judges in
awarding Medals:—

"2. Its simple
construction ensures
durability &c.

"4.—The steam or
air cushions at each end of cylinder effectually protect from injury.

"5. Its having an automatic feed, giving it a steady motion, &c.

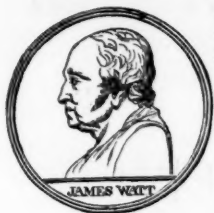
"6. Its greater steadiness and absence of jar and vibration ex-
perienced in other drills, which is very destructive to their working
parts, &c.

"7. Its greater power is some FORTY PER CENT. in favour of the
Ingersoll."

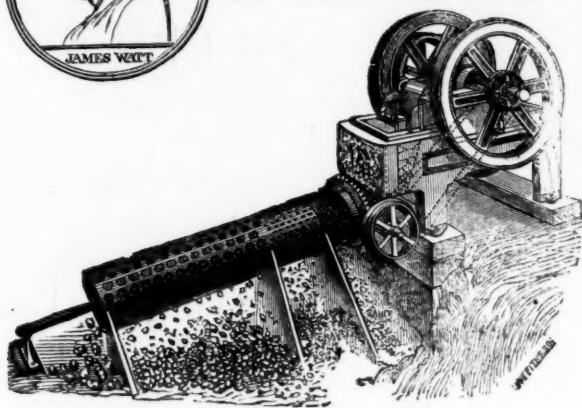
Medals awarded for several years in succession "For the reason
that we adjudge it so important in its use and complete in its con-
struction as to supplant every article previously used for accom-
plishing the same purpose."

Estimates given for Air Compressors and all kinds of Mining
Machinery. Send for Illustrated Catalogues, Price Lists, Testi-
monials, &c., as above.

BUYERS are CAUTIONED against Purchasing any Infringements of H.R.M.'s Numerous PATENTS.



Ore Crushers, H. R. M.'s
New Patent Crushing Jaw
EXTENSIVELY USED
BY MINE OWNERS.



FIXED MACHINE AND SCREEN,
Specially designed and largely used for
Crushing Pyrites, Limestone, Cement, Coal, Rocks, &c.,
AT ALL THE PRINCIPAL WORKS IN THE KINGDOM.

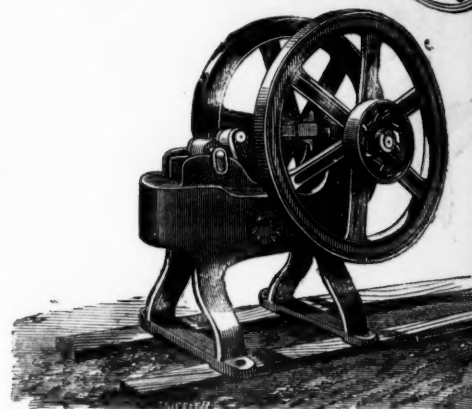
Takes in 20 in. by 9 in., and is shown by TESTIMONIALS to be
breaking from 1000 to 1200 tons per day of 10 hours, at
THREE HALF-PENCE PER TON.
FEW WORKING PARTS.
SMALL WEAR AND TEAR.
FREEDOM FROM BREAKAGE.

H. R. MARSDEN, LEEDS, Mining Improvements
ENGINEER. Revolving Picking
Table.

1150 NOW IN USE.



"The Machine is well designed, simple, but substantially made,
and is capable of reducing any material to fine gravel, such as cop-
per ore, and is certainly preferable to the stamps in use for that
purpose."—*Mining Journal*.



MACHINE FOR HAND OR STEAM POWER.

For making gravel for gentlemen's walks in parks and gardens
for grinding emery, flints, fossils, &c., for pulverising silver,
and other ores; also gold quartz, and especially useful to
and metallurgists for sampling, as it is capable of pulverising
hardest material, and can be turned by one man with ease.

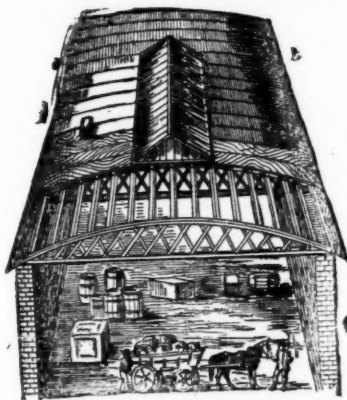
REFERENCES TO ALL PARTS OF THE WORLD.
SIMPLICITY OF CONSTRUCTION. EXCELLENCE OF
ECONOMY OF POWER

THESE STONE BREAKERS AND ORE CRUSHERS ARE UNIVERSALLY PRONOUNCED THE ONLY PERFECT SUCCESS.

For Catalogues, Testimonials, &c., apply to the—

Sole Maker & Patentee, H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND

**M'TEAR AND CO.'S CIRCULAR
FELT ROOFING,**



FOR
GREAT ECONOMY
AND
CLEAR WIDE SPACE.

For particulars, estimates,
and plans, address,—

M'TEAR & CO.,
ST. BENET CHAMBERS,
FENCHURCH STREET,
LONDON, E.C.;
4, PORTLAND STREET,
MANCHESTER;
OR
CORPORATION STREET,
BELFAST.

The above drawing shows the construction of this cheap and handsome roof, now
much used for covering factories, stores, sheds farm buildings, &c., the principal
of which are double bow and string girders of best pine timber, sheeted with 1/2 in.
boards, supported on the girders by purlins running longitudinally, the whole
being covered with patent waterproof roofing felt. These roofs so combine light-
ness with strength that they can be constructed up to 100 ft. span without centre
supports, thus not only affording a clear wide space, but effecting a great saving
both in the cost of roof and uprights.

They can be made with or without top-lights, ventilators, &c. Felt roofs of any
description executed in accordance with plans. Prices for plain roofs from 30s. to
80s. per square, according to span, size, and situation.

Manufacturers of PATENT FELTED SHEATHING, for covering ships' bot-
oms under copper or zinc.

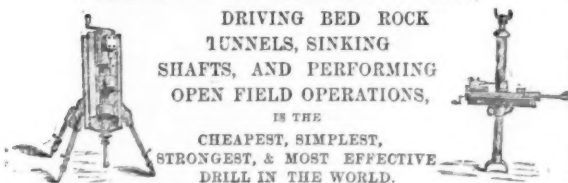
INODOROUS FELT for lining damp walls and under floor cloths.
DRY HAIR FELT for deadening sound and for covering steam pipes, thereby
saving 25 per cent. in fuel by preventing the radiation of heat.

PATENT ASPHALTE ROOFING FELT, price 1d. per square foot.

Wholesale buyers and exporters allowed liberal discounts.
PATENT ROOFING VARNISH, in boxes from 3 gallons to any quantity re-
quired 8d. per gallon.

DUNN'S ROCK DRILL,

AND
AIR COMPRESSORS,



DRIVING BED ROCK
TUNNELS, SINKING
SHAFTS, AND PERFORMING
OPEN FIELD OPERATIONS,
IS THE
CHEAPEST, SIMPLEST,
STRONGEST, & MOST EFFECTIVE
DRILL IN THE WORLD.

OFFICE,—193, GOSWELL ROAD
(W. W. DUNN AND CO.),
LONDON, E.C.



By a special method of preparation, this leather is made solid, perfectly close in
texture, and impermeable to water; it has, therefore, all the qualifications essen-
tial for pump buckets, and is the most durable material of which they can be made.
It may be had of all dealers in leather, and of—

I. AND T. HEPBURN AND SONS,
TANNERS AND CURRIERS, LEATHER MILLBAND AND HOSE PIPE
MANUFACTURERS,
LONG LANE, SOUTHWARK, LONDON
Prize Medals, 1851, 1855, 1862, for
MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.

BRYDON AND DAVIDSON'S ROCK DRILL

Reduced prices of the Kainotomon Rock Drill, Nos. 1 & 2, £32 & £34

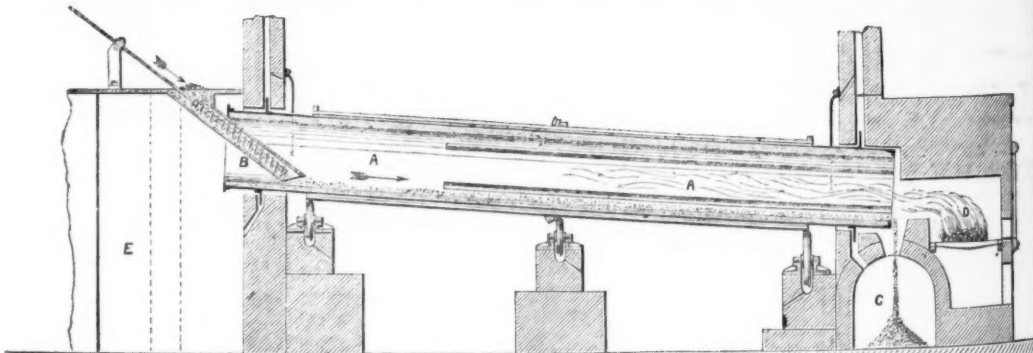
SUBJECT TO DISCOUNT.

IMPROVED AIR COMPRESSORS.

Makers of Pumping and Winding Engines, Steam Hammer
Boilers, Pump Pipes, &c., &c. Castings of all kinds.

**BRYDON AND DAVIDSON, ENGINEERS,
WHITEHAVEN.**

**OXLAND AND HOCKING'S
PATENT CALCINER,**



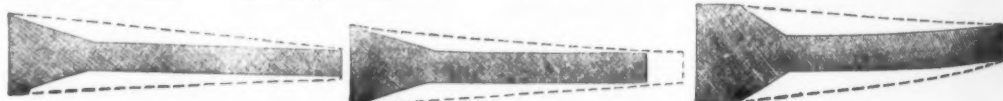
For Roasting Ores containing Sulphur, Arsenic, and other Volatile
Matters, have been supplied to some of the principal Mines
in the United Kingdom and Abroad.

For particulars, apply to—

Dr. OXLAND, 8, PORTLAND SQUARE, PLYMOUTH; or to
Mr. JOHN HOCKING, Jun., TREWIRGIE TERRACE, REDRUTH

TO COLLIERY PROPRIETORS.

IMPROVED "REGISTERED" SECTIONS OF SCREEN STEEL



THE DOTTED LINES SHOW THE ORDINARY SECTION, AND THE DARK GROUND THE IMPROVED SECTION.
A saving of at least 50 per cent. is effected by the great reduction in weight of material.—For price and particulars apply to—

JOEL EATON WALKER, STEEL MERCHANT, SHEFFIELD.

NOTICE.—These Sections are Registered